

**Clouds and the Earth's Radiant Energy System  
(CERES)**

**Data Management System**

**CERES Grid Single Satellite Fluxes and Clouds and  
Compute Spatial Averages  
(Subsystem 6.0)**

**and**

**CERES Grid TOA and Surface Fluxes for  
Instantaneous Surface Product  
(Subsystem 9.0)**

**Release 2 Test Plan  
TRMM Launch**

**Primary Authors**

*Nichele McKoy and Carla Franklin*

Science Applications International Corporation  
One Enterprise Parkway, Suite 300  
Hampton, Virginia 23666

Data Management Office  
Atmospheric Sciences Division  
NASA Langley Research Center  
Hampton, VA 23681-0001

April 1998

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 Introduction .....	1
1.1 Document Overview .....	1
1.2 Subsystem Overview .....	2
1.2.1 FSW Main Processor (PGE 6.1P1) .....	2
1.2.2 FSW Postprocessor (PGE 6.2P1) .....	2
1.2.3 FSW HDF Postprocessor (PGE 6.3P1) .....	2
1.2.4 Post-MOA Processor (PGE 9.1P1) .....	3
1.2.5 SFC Main Processor (PGE 9.2P1) .....	3
1.2.6 SFC Postprocessor (PGE 9.3P1) .....	3
1.2.7 SFC HDF Postprocessor (PGE 9.4P1) .....	3
2.0 Test Environment .....	4
2.1 External Interface Requirements .....	4
2.2 Directory Structure and File Descriptions .....	5
3.0 Software and Data File Installation Procedures .....	6
3.1 Installation .....	6
3.1.1 Environment Variables .....	6
3.1.2 Software/Data File Install Procedure: .....	6
3.2 Compilation .....	7
4.0 Test and Evaluation Procedures .....	8
4.1 Stand-alone Test Procedures .....	8
4.1.1 Subsystem 6 Test Procedures PGE 6.1 (FSW Main Processor), PGE 6.2 (FSW Postprocessor), PGE 6.3 (FSW HDF Postprocessor) .....	8
4.1.2 Post-MOA Processor Test Procedures PGE 9.1 (Post-MOA Processor) .....	8
4.1.3 Subsystem 9 Test Procedures PGE 9.2 (SFC Main Processor), PGE 9.3 (SFC Postprocessor), PGE 9.4 (SFC HDF Postprocessor) .....	8
4.2 Normal Operating Procedures .....	9
4.2.1 PGE 6.1 (FSW Main Processor) .....	9
4.2.2 PGE 6.2 (FSW Postprocessor) .....	9
4.2.3 PGE 6.3 (FSW HDF Postprocessor) .....	9
4.2.4 PGE 9.1 (Post-MOA Processor) .....	10
4.2.5 PGE 9.2 (SFC Main Processor) .....	10
4.2.6 PGE 9.3 (SFC Postprocessor) .....	10
4.2.7 PGE 9.4 (SFC HDF Postprocessor) .....	11

## TABLE OF CONTENTS

4.3 Evaluation Procedures .....	12
4.3.1 Subsystem 6 Test Procedures PGE 6.1 (FSW Main Processor), PGE 6.2 (FSW Postprocessor), PGE 6.3 (FSW HDF Postprocessor) .....	12
4.3.2 Post-MOA Processor Test Procedures PGE 9.1 (Post-MOA Processor) .....	12
4.3.3 Subsystem 9 Test Procedures PGE 9.2 (SFC Main Processor), PGE 9.3 (SFC Postprocessor), PGE 9.4 (SFC HDF Postprocessor) .....	12
4.4 Solutions to Possible Problems .....	12
References .....	13
Appendix A Acronyms and Abbreviations .....	A-1
Appendix B Directory Structure Diagrams .....	B-1
Appendix C File Description Tables .....	C-1

## **LIST OF FIGURES**

Figure		Page
Figure B-1.	Directory Structure for Subsystems 6 and 9 within the TISA_grid Working Group.....	B-1

## LIST OF TABLES

<u>Table</u>		<u>Page</u>
Table 2-1.	CERESlib Routines Used by TISA Gridding .....	4
Table 4-1.	Binary to HDF Zone Mapping .....	11
Table C.1-1.	Production Scripts and Executables .....	C-1
Table C.2-1.	Process Control Files .....	C-2
Table C.2-2.	Metadata Control Files .....	C-4
Table C.2-3.	Status Message Files .....	C-5
Table C.3-1.	Production Makefiles .....	C-6
Table C.4-1.	Ancillary Input Data .....	C-7
Table C.5-1.	Primary Input Data .....	C-8
Table C.6-1.	Expected Output Data .....	C-8
Table C.7-1.	Production Output Data .....	C-10
Table C.8-1.	Output Temporary Data Files .....	C-12
Table C.9-1.	Error and Status Message Files .....	C-12
Table C.10-1.	Test Evaluation Scripts and Executables .....	C-14

## **1.0 Introduction**

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES will continue that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation, and to improve the consistency between the cloud parameters and the radiation fields, CERES will include cloud imager data and other atmospheric parameters. The first CERES instrument is scheduled to be launched on the TRMM spacecraft in 1997. Additional CERES instruments will fly on the EOS Morning Crossing Mission (EOS-AM) platforms, the first of which is scheduled for launch in 1998, and on the EOS Afternoon Crossing Mission (EOS-PM) platforms, the first of which is scheduled for launch in 2000.

### **1.1 Document Overview**

This document, the CERES Release 2 Delivery Test Plan for the CERES Grid Single Satellite Fluxes and Clouds and Compute Spatial Averages (Subsystem 6.0) and CERES Grid TOA and Surface Fluxes for Instantaneous Surface Product (Subsystem 9.0), is part of the Release 2 delivery package to the Langley Distributed Active Archive Center (DAAC). It provides a description of the Release 2 software and supporting data files, and it explains the procedures for installing, executing, and testing the software. Procedures for validating the test results are also provided in this document.

This document is organized as follows:

[Section 1.0 - Introduction](#)

[Section 2.0 - Test Environment](#)

[Section 3.0 - Software and Data File Installation Procedures](#)

[Section 4.0 - Test and Evaluation Procedures](#)

[Appendix A - Acronyms and Abbreviations](#)

[Appendix B - Directory Structure Diagrams](#)

[Appendix C - File Description Tables](#)

## 1.2 Subsystem Overview

CERES Grid Single Satellite Fluxes and Clouds and Compute Spatial Averages and CERES Grid TOA and Surface Fluxes for Instantaneous Surface Product Subsystems 6 and 9, provide the transformation from instantaneous, instrument-referenced data to spatially-averaged Earth-referenced data. These Subsystems perform two major functions: gridding and spatial averaging. The gridding function assigns CERES footprints to the appropriate regional hour box. The spatial averaging function computes spatial averages of the various radiative flux parameters and cloud properties over each regional hour box. After passing through these Subsystems, the CERES data lose their traceability to specific CERES measurements. The input products of Subsystem 6 and Subsystem 9 are Single Satellite CERES Footprint Radiative Fluxes and Clouds (CRS); Single Satellite TOA; Surface Flux and Cloud Pixels (SSF); and Meteorological, Ozone, and Aerosol (MOA). The output products are Gridded Single Satellite Fluxes and Clouds (FSW); Single Satellite TOA, Surface Flux and Cloud Pixels (SFC); and Post Meteorological, Ozone, and Aerosol (PMOA). Details of the CRS, SSF, MOA, FSW, and SFC data products can be found in the CERES Data Management System Data Products Catalog ([Reference 1](#)). PMOA is an intermediate product produced and used only by the Time Interpolation and Spatial Averaging (TISA) Subsystems. Subsystem 6 and Subsystem 9 consist of seven Product Generation Executives (PGE) which are described in the following sections.

### 1.2.1 FSW Main Processor (PGE 6.1P1)

The FSW Main Processor grids and spatially averages the footprint data from the CERES CRS data product. The footprints are assigned to a regional hour box based on the Greenwich meridian time (GMT) time associated with the footprint. The footprints in each regional hour box are averaged together and written to an hourly FSW intermediate product.

### 1.2.2 FSW Postprocessor (PGE 6.2P1)

The FSW Postprocessor sorts and merges the hourly FSW intermediate products for a given month to produce a monthly FSW data product. The monthly FSW data product is organized in 180 zonal files which contain regional hour boxes sorted by region and then hour. The FSW Postprocessor only produces the monthly FSW zonal files for zones which contain regional hour box data.

### 1.2.3 FSW HDF Postprocessor (PGE 6.3P1)

The FSW HDF Postprocessor converts the monthly FSW zonal files for a given month into a monthly FSW HDF data product. The monthly FSW Hierarchical Data Format (HDF) data product is organized in 18 files containing 10 zones per file. The regional hour box data of a monthly FSW HDF data file are written to HDF VData where the records of the VData are sorted by region and then hour.

#### **1.2.4 Post-MOA Processor (PGE 9.1P1)**

The Post-MOA Processor processes the hourly MOA products for a given month to produce a monthly PMOA data product. The monthly PMOA data product is organized in 4 files which contain regional-hourly records sorted by region and then by hour for the CERES 1.0-degree nested regions. The Post-MOA Processor requires at least 1 day (24 hours) of MOA data in order to process; however, if available, it can process the whole month of MOA data, or it can process multiple days of MOA data. The PMOA data product is a subset of the MOA data product.

#### **1.2.5 SFC Main Processor (PGE 9.2P1)**

The SFC Main Processor grids and spatially averages the footprint data from the CERES SSF data product. The footprints are assigned to a regional hour box based on the GMT time associated with the footprint. The footprints in each regional hour box are averaged together and written to an hourly SFC intermediate product.

#### **1.2.6 SFC Postprocessor (PGE 9.3P1)**

The SFC Postprocessor sorts and merges the hourly SFC intermediate products for a given month to produce a monthly SFC data product. The monthly SFC data product is organized in 180 zonal files which contain regional hour boxes sorted by region and then by hour. The SFC Postprocessor only produces the monthly SFC zonal files for zones which contain regional hour box data.

#### **1.2.7 SFC HDF Postprocessor (PGE 9.4P1)**

The SFC HDF Postprocessor converts the monthly SFC zonal files for a given month into a monthly SFC HDF data product. The monthly SFC HDF data product is organized in 18 files containing 10 zones per file. The regional hour box data of a monthly SFC HDF data file are written to HDF VData where the records of the VData are sorted by region and then hour.

## 2.0 Test Environment

### 2.1 External Interface Requirements

Table 2.1-1. The CERESlib Fortran 90 modules located in libraries `cereslib.a` and `data_products.a` and used by Subsystems 6 and 9 are listed in [Tables 2.1-1](#).

Table 2-1. CERESlib Routines Used by TISA Gridding (Sheet 1 of 2)

File Name	Description
<code>cadm_mod</code>	Provides internal subroutines which read and interpolate CERES SW and LW anisotropic models
<code>ceres_constants</code>	Provides commonly used CERES constants
<code>ceres_defaults</code>	Provides system-defined CERES default values
<code>ceres_meteor</code>	Provides general routines for vertically interpolating meteorological data and converting between specific humidity and relative humidity
<code>ceres_status</code>	Provides a common set of file and return statuses
<code>ceres_time</code>	Provides commonly used time functions
<code>crs_io</code>	Provides CRS I/O Interface for CRS Product
<code>f90_kind</code>	Provides F90 compiler specific KIND values
<code>fsw</code>	Provides the I/O interface to the monthly and hourly FSW binary data products
<code>fsw_type_def</code>	Provides the FSW type definitions
<code>io</code>	Provides Toolkit IO wrappers
<code>meta_util</code>	Provides Toolkit metadata wrappers
<code>moa_io</code>	Provides I/O interface to MOA data product
<code>msg</code>	Provides interface to the SMF Toolkit
<code>pcf</code>	Provides run-time parameter from a PCF
<code>post_moа_file</code>	Provides I/O interface to the Post-MOA product and the PMOA type definitions
<code>reference_grid</code>	Provides an interface to the CERES reference grid
<code>sarb_params</code>	Provides CRS and SYN product variables from Subsystems 5 and 7.2 and routines to print formatted listing of the SARB-contributed elements to the CRS and SYN products

Table 2-1. CERESlib Routines Used by TISA Gridding (Sheet 2 of 2)

File Name	Description
sfc	Provides the I/O interface to the monthly and hourly SFC binary data products
sfc_type_def	Provides the SFC type definitions
solar_declination	Provides the solar declination, distance correction, and delta longitude for a particular year and month
ssf_typdef	Provides SSF f90 structure definition and subroutines to read, write, open, and close SSF files
tisa_grid_type_def	Provides a set of type definitions that are shared by FSW and SFC.

## 2.2 Directory Structure and File Descriptions

The CERES Grid Single Satellite Fluxes and Clouds and Compute Spatial Averages (Subsystem 6) and CERES Grid TOA and Surface Fluxes for Instantaneous Surface Product (Subsystem 9) will provide the compressed tar files, TISAggrid\_anc\_R2-056.tar.Z, TISAggrid\_data\*\_R2-056.tar.Z<sup>2</sup>, TISAggrid\_src\_R2-056.tar.Z, and TISAggrid\_doc\_R2-056.tar.Z to the DAAC as the Release 2 comprehensive software delivery. The directory overview structure of the untarred files is shown in Appendix B. The contents of the tar files are described in detail in Tables C.1-1 through C.10-1 in Appendix C. A documentation tar file is included in the Release 2 delivery package.

<sup>2</sup> Due to the size of some of the data files, several tar files containing data will be provided.

## 3.0 Software and Data File Installation Procedures

This section contains information on installing and compiling the TISA Gridding Subsystems.

### 3.1 Installation

#### 3.1.1 Environment Variables

The scripts, makefiles, and Process Control files in the Subsystems 6 and 9 delivery package expect the following environment variables to be set:

**CERESENV** - Pathname and script name for ceres-env.csh  
**PGSDIR** - Directory for Toolkit libraries  
**PGSMSG** - Directory to store the PGS message files  
**PGSINC** - Directory to store the PGS include files  
**F90NAG** - Directory for NAG f90 compiler  
**CERESHOME** - Top Directory for CERES Software  
**CERESLIB** - Directory for CERESlib (\$CERESHOME/lib)

#### 3.1.2 Software/Data File Install Procedure:

1. source **\$CERESENV** (32-bit NAG version)
2. cp (or mv) **TISAgrib\_\*\_R2-056.tar.Z** **\$CERESHOME**
3. cd **\$CERESHOME**
4. uncompress **TISAgrib\_anc\_R2-056.tar.Z**
5. uncompress **TISAgrib\_data\*\_R2-056.tar.Z**
6. uncompress **TISAgrib\_src\_R2-056.tar.Z**
7. tar xf **TISAgrib\_anc\_R2-056.tar**
8. tar xf **TISAgrib\_data1\_R2-056.tar**
9. tar xf **TISAgrib\_data2\_R2-056.tar**
10. tar xf **TISAgrib\_data3\_R2-056.tar**
11. tar xf **TISAgrib\_data4\_R2-056.tar**
12. tar xf **TISAgrib\_data5\_R2-056.tar**
13. tar xf **TISAgrib\_src\_R2-056.tar**

## 3.2 Compilation

1. source \$CERESENV (32-bit NAG version)
2. cd \$CERESHOME/tisa\_grid
3. make -f Makefile\_global

**NOTE:** These procedures will create the TISA Gridding subsystems executables and compile the Status Message Files (SMF). The message files and include files created when compiling the SMF files will be moved to the \$PGSMSG directory and \$PGSINC directory.

## **4.0 Test and Evaluation Procedures**

This section provides general information on how to execute the TISA\_Grid Subsystem Software.

### **4.1 Stand-alone Test Procedures**

The Post-MOA processor must be run prior to running Subsystem 6 or Subsystem 9.

#### **4.1.1 Subsystem 6 Test Procedures**

**PGE 6.1 (FSW Main Processor), PGE 6.2 (FSW Postprocessor), PGE 6.3 (FSW HDF Postprocessor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/6.1P1\_6.3P1
3. test\_6.1P1\_6.3P1.csh

#### **4.1.2 Post-MOA Processor Test Procedures**

**PGE 9.1 (Post-MOA Processor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/9.1P1
3. test\_9.1P1.csh

#### **4.1.3 Subsystem 9 Test Procedures**

**PGE 9.2 (SFC Main Processor), PGE 9.3 (SFC Postprocessor), PGE 9.4 (SFC HDF Postprocessor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/9.2P1\_9.4P1
3. test\_9.2P1\_9.4P1.csh

NOTE: The test data are stored in the appropriate PGE directory under **\$CERESHOME/tisa\_grid/test\_suites**.

## 4.2 Normal Operating Procedures

### 4.2.1 PGE 6.1 (FSW Main Processor)

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_6.1P1.csh <data\_year> <data\_month> <data\_day> <data\_hour>
4. pcf\_gen\_6.1P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_6.1P1.csh script.
5. tisa\_grid\_main\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_6.1P1.csh script.

### 4.2.2 PGE 6.2 (FSW Postprocessor)

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_6.2P1.csh <data\_year> <data\_month>
4. pcf\_gen\_6.2P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_6.2P1.csh script.
5. tisa\_grid\_post\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_6.2P1.csh script.

### 4.2.3 PGE 6.3 (FSW HDF Postprocessor)

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_6.3P1.csh <data\_year> <data\_month>
4. pcf\_gen\_6.3P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_6.3P1.csh script.
5. tisa\_grid\_fsw\_hdf\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_6.3P1.csh script.

See the [Table 4-1](#) below for an explanation of the mapping of the zones from the binary to the HDF product.

#### **4.2.4 PGE 9.1 (Post-MOA Processor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_9.1P1.csh <data\_year> <data\_month>
4. pcf\_gen\_9.1P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_9.1P1.csh script.
5. tisa\_post\_moa\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_9.1P1.csh script.

#### **4.2.5 PGE 9.2 (SFC Main Processor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_9.2P1.csh <data\_year> <data\_month> <data\_day> <data\_hour>
4. pcf\_gen\_9.2P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_9.2P1.csh script.
5. tisa\_grid\_main\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_9.2P1.csh script.

#### **4.2.6 PGE 9.3 (SFC Postprocessor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_9.3P1.csh <data\_year> <data\_month>
4. pcf\_gen\_9.3P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_9.3P1.csh script.
5. tisa\_grid\_post\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_9.3P1.csh script.

#### 4.2.7 PGE 9.4 (SFC HDF Postprocessor)

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/bin
3. input\_gen\_9.4P1.csh <data\_year> <data\_month>
4. pcf\_gen\_9.4P1.csh <pge\_input\_file>  
The *pge\_input\_file* is the file created by the input\_gen\_9.4P1.csh script.
5. tisa\_grid\_sfc\_hdf\_processor.csh <pge\_pcf\_file>  
The *pge\_pcf\_file* is the file created by the pcf\_gen\_9.4P1.csh script.

See [Table 4-1](#) below for an explanation of the mapping of the zones from the binary to the HDF product.

**NOTE:**

<data\_year> is a 4-digit year  
<data\_month> is a 2-digit month (01 - 12)  
<data\_day> is a 2-digit day (01 - 31)  
<data\_hour> is a 2-digit hour (00 - 23)

Table 4-1. Binary to HDF Zone Mapping

<b>zonal_file</b>	<b>Process Zones</b>	<b>zonal_file</b>	<b>Process Zones</b>
1	1-10	10	91-100
2	11-20	11	101-110
3	21-30	12	111-120
4	31-40	13	121-130
5	41-50	14	131-140
6	51-60	15	141-150
7	61-70	16	151-160
8	71-80	17	161-170
9	81-90	18	171-180

The *pge\_input\_file* is written to the \$CERESHOME/tisa\_grid/rcf/pif directory.  
The *pge\_pcf\_file* is written to the \$CERESHOME/tisa\_grid/rcf/pcf directory.

## **4.3 Evaluation Procedures**

### **4.3.1 Subsystem 6 Test Procedures**

**PGE 6.1 (FSW Main Processor), PGE 6.2 (FSW Postprocessor), PGE 6.3 (FSW HDF Postprocessor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/6.1P1\_6.3P1
3. eval\_6.1P1\_6.3P1.csh
4. The following output will be displayed to the screen on a successful run:

**SUCCESSFUL Evaluation of Subsystem 6 test.**

### **4.3.2 Post-MOA Processor Test Procedures**

**PGE 9.1 (Post-MOA Processor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/9.1P1
3. eval\_9.1P1.csh
4. The following output will be displayed to the screen on a successful run:

**SUCCESSFUL Evaluation of the Post-MOA Processor test.**

### **4.3.3 Subsystem 9 Test Procedures**

**PGE 9.2 (SFC Main Processor), PGE 9.3 (SFC Postprocessor), PGE 9.4 (SFC HDF Postprocessor)**

1. source \$CERESENV
2. cd \$CERESHOME/tisa\_grid/test\_suites/9.2P1\_9.4P1
3. eval\_9.2P1\_9.4P1.csh
4. The following output will be displayed to the screen on a successful run:

**SUCCESSFUL Evaluation of the Subsystem 9 test.**

## **4.4 Solutions to Possible Problems**

**Contact:**      Nichelle C. McKoy, SAIC  
                  n.c.mckoy@larc.nasa.gov

## **References**

1. Clouds and the Earth's Radiant Energy System (CERES) Data Management System, *Data Products Catalog*, Release 2, March 1998

**APPENDIX A**  
**Acronyms and Abbreviations**

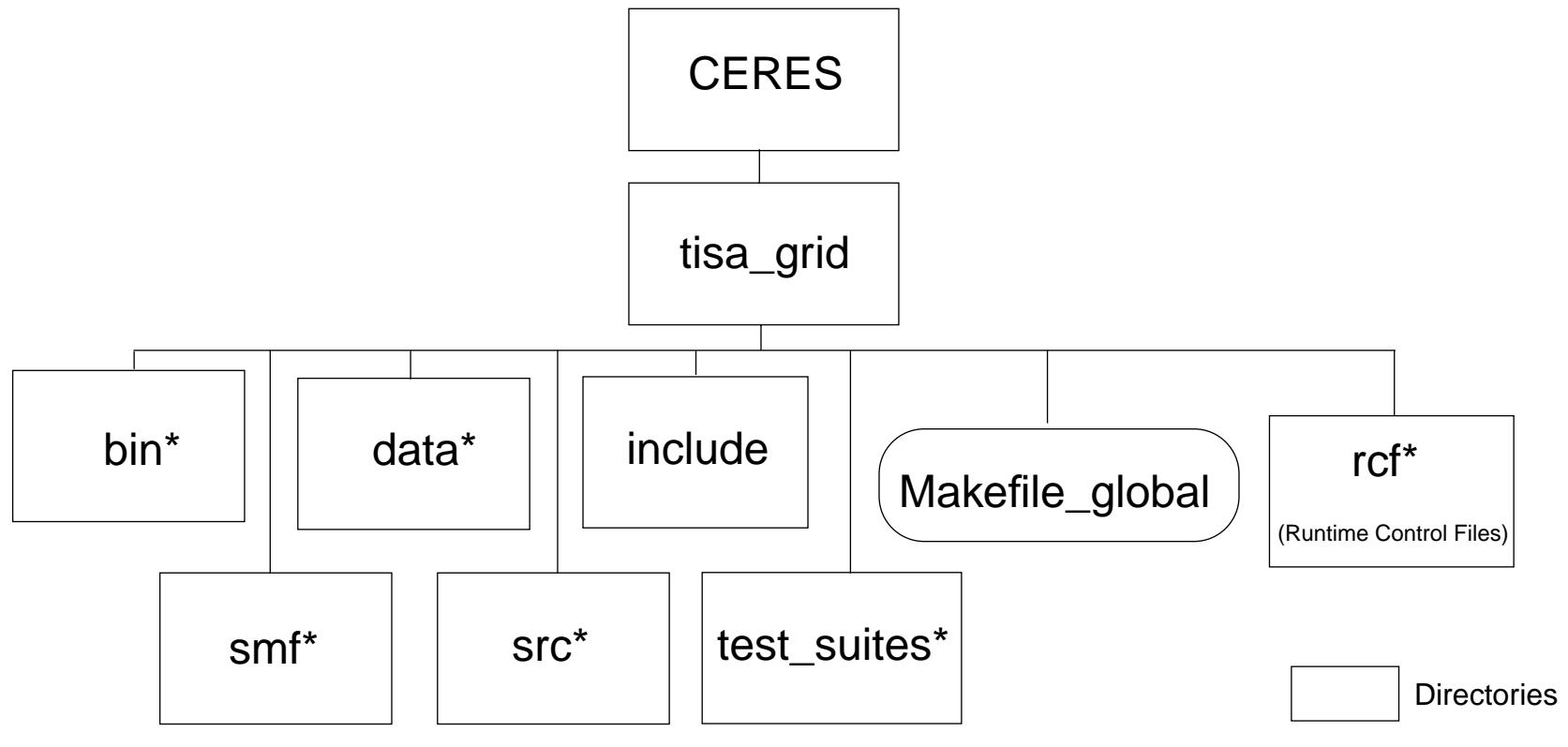
## **Appendix A** **Acronyms and Abbreviations**

CERES	Clouds and the Earth's Radiant Energy System
CERESlib	CERES library
CRS	Cloud Radiated Swath
DAAC	Distributed Active Archive Center
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
FSW	Gridded Single Satellite Fluxes and Clouds and Compute Spatial Averages
GMT	Greenwich meridian time
HDF	Hierarchical Data Format
MOA	Meteorological, Ozone, and Aerosol
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File
PGE	Product Generation Executives
PMOA	Post Meteorological, Ozone, and Aerosol
SCF	Science Computing Facility
SFC	Gridded Single Satellite TOA and Surface Fluxes
SMF	Status Message File
SSF	Single Satellite CERES Footprint TOA and Surface Fluxes, Clouds
TOA	Top-of-the-Atmosphere
TRMM	Tropical Rainfall Measuring Mission

**APPENDIX B**  
**Directory Structure Diagrams**

**Appendix B**  
**Directory Structure Diagrams**

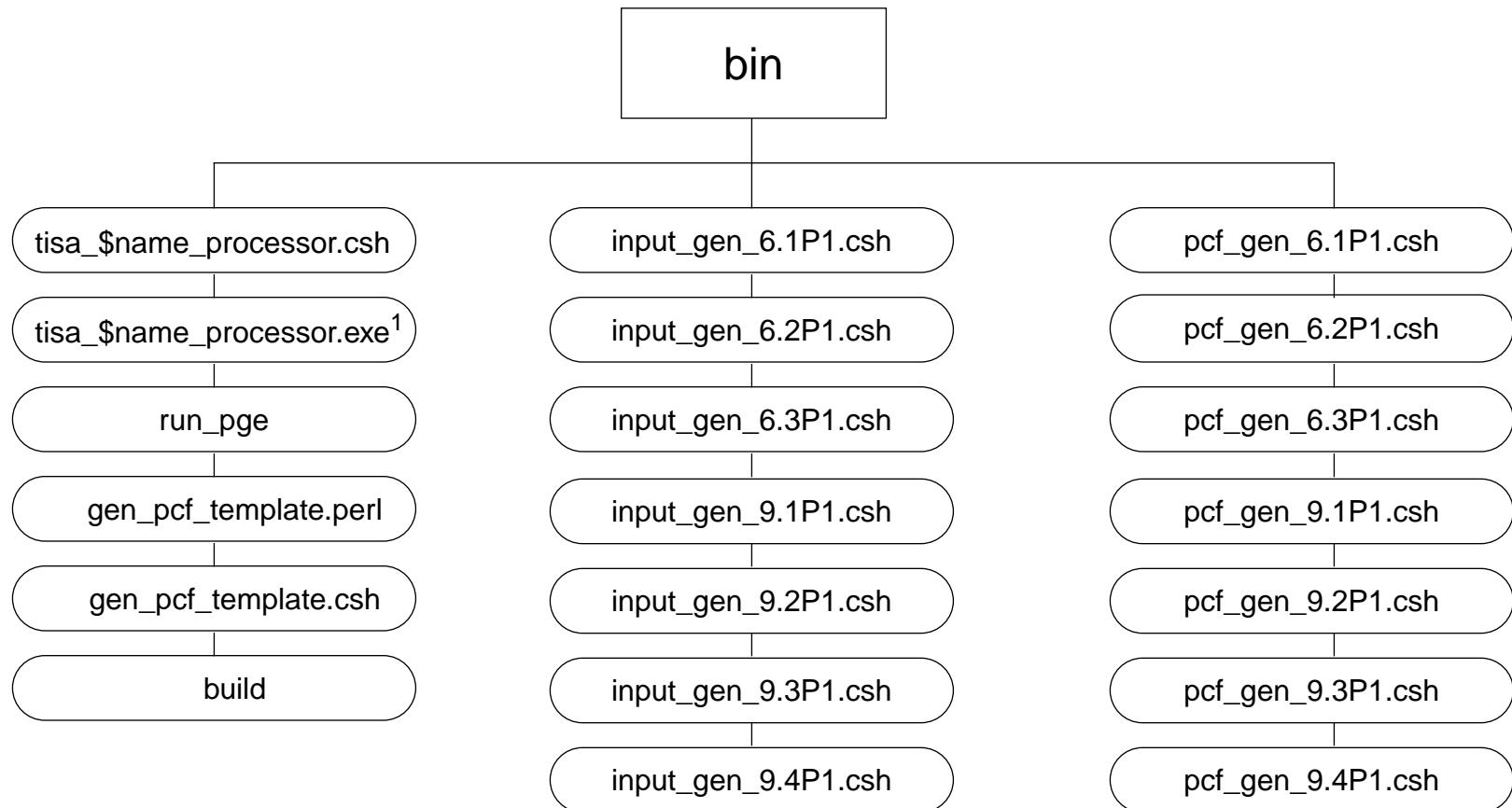
**Directory Structure for Subsystems 6 and 9**



\* Breakdown of subdirectories shown on following pages.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (1 of 43)

## Breakdown of the *tisa\_grid/bin* Directory

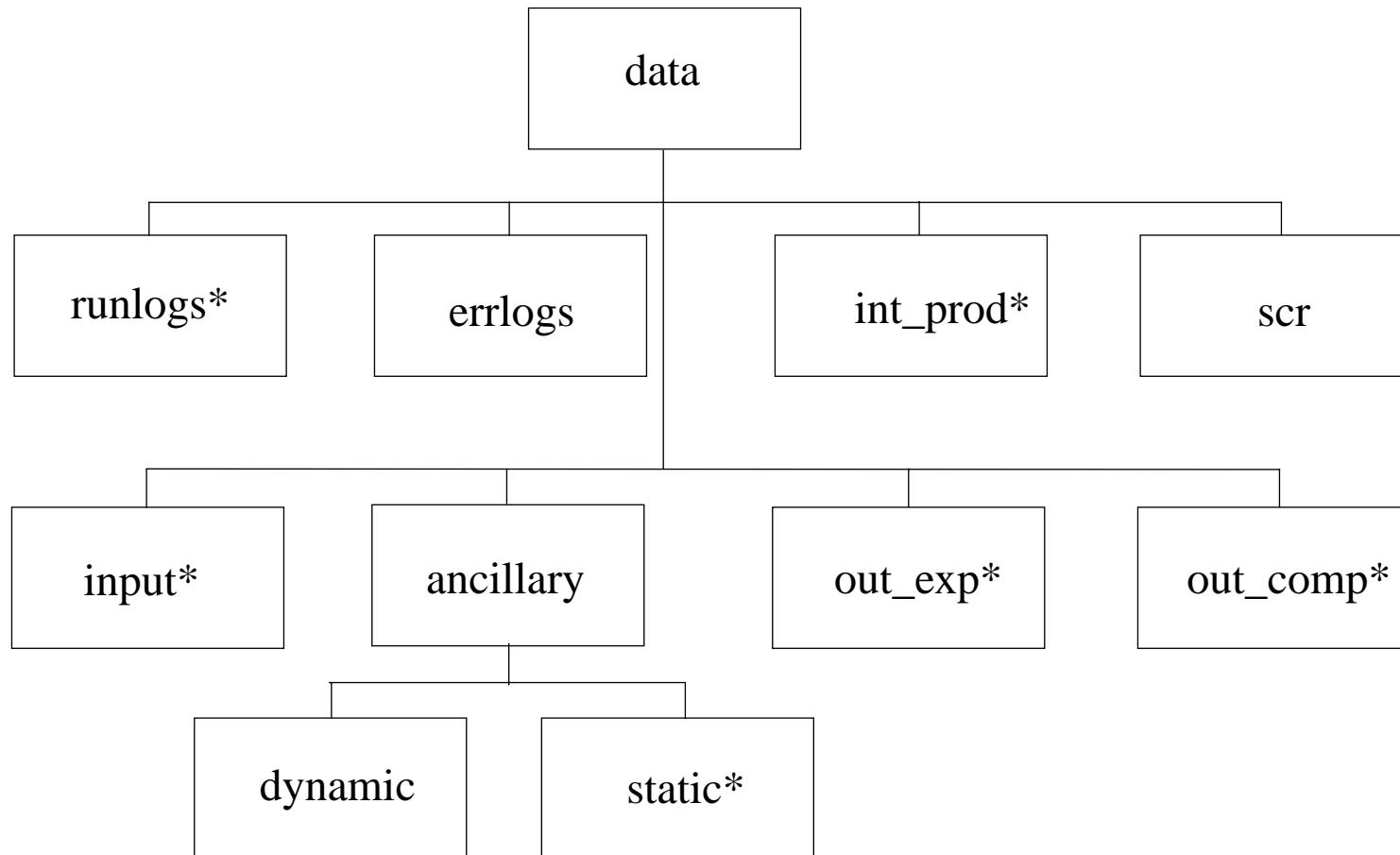


\$name - Indicates grid\_main, grid\_post, grid\_fsw\_hdf, grid\_sfc\_hdf and post\_moa for the 5 executable files

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (2 of 43)

## Breakdown of the *tisa\_grid/data* Directory



\* Breakdown of subdirectories shown on following pages.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (3 of 43)

## **Breakdown of the *tisa\_grid/data/ancillary/static* Directory**

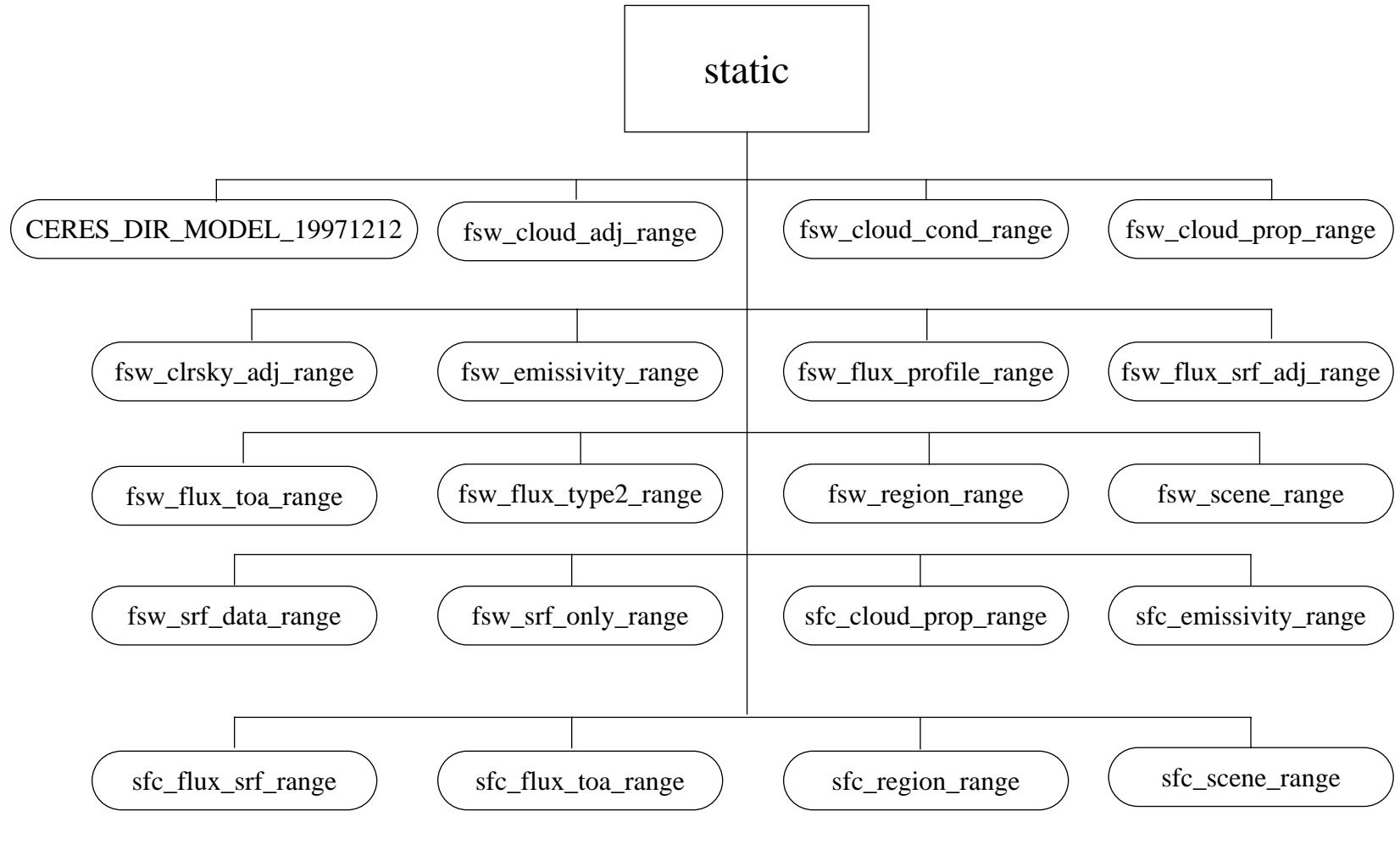
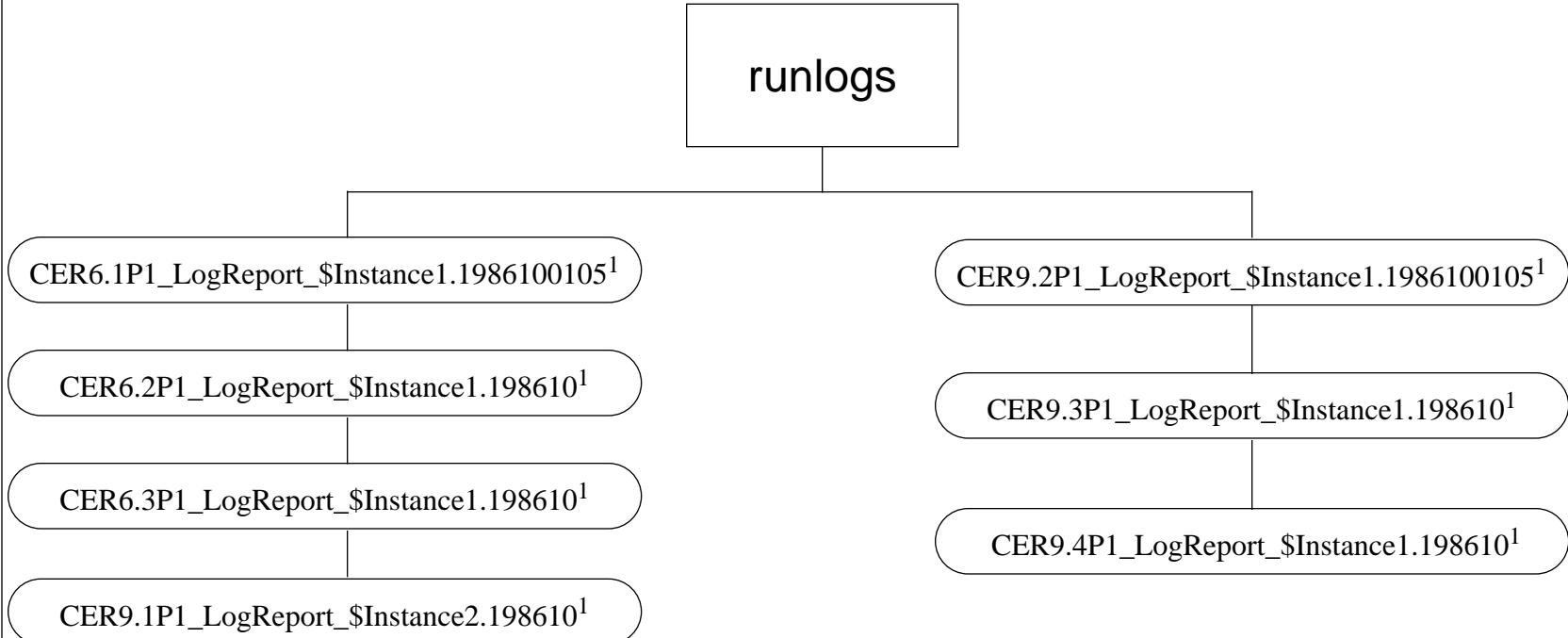


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (4 of 43)

## Breakdown of the *tisa\_grid/data/runlogs* Directory

B-5



\$Instance1 = 'TRMM-PFM-VIRS\_ValidationR1\_000000

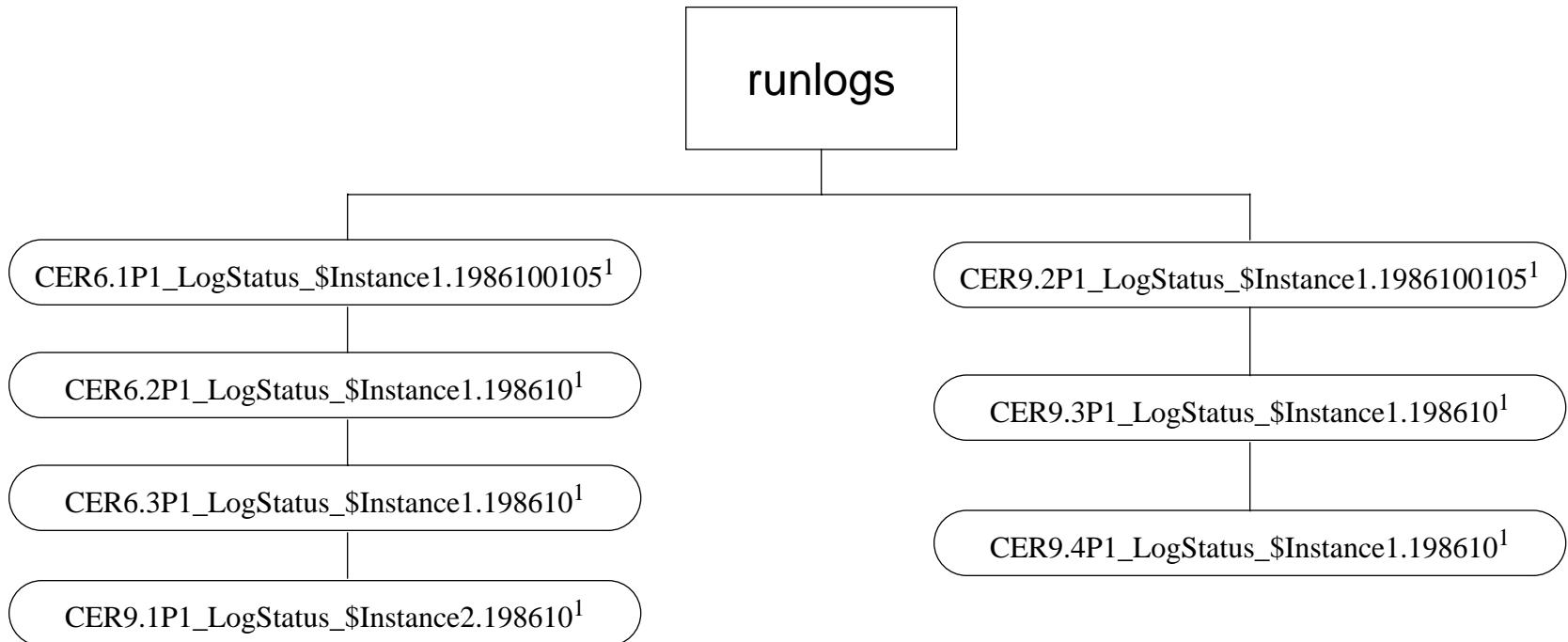
\$Instance2 = 'CERES\_ValidationR1\_000000

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (5 of 43)

## Breakdown of the *tisa\_grid/data/runlogs* Directory

B-6



\$Instance1 = 'TRMM-PFM-VIRS\_ValidationR1\_000000

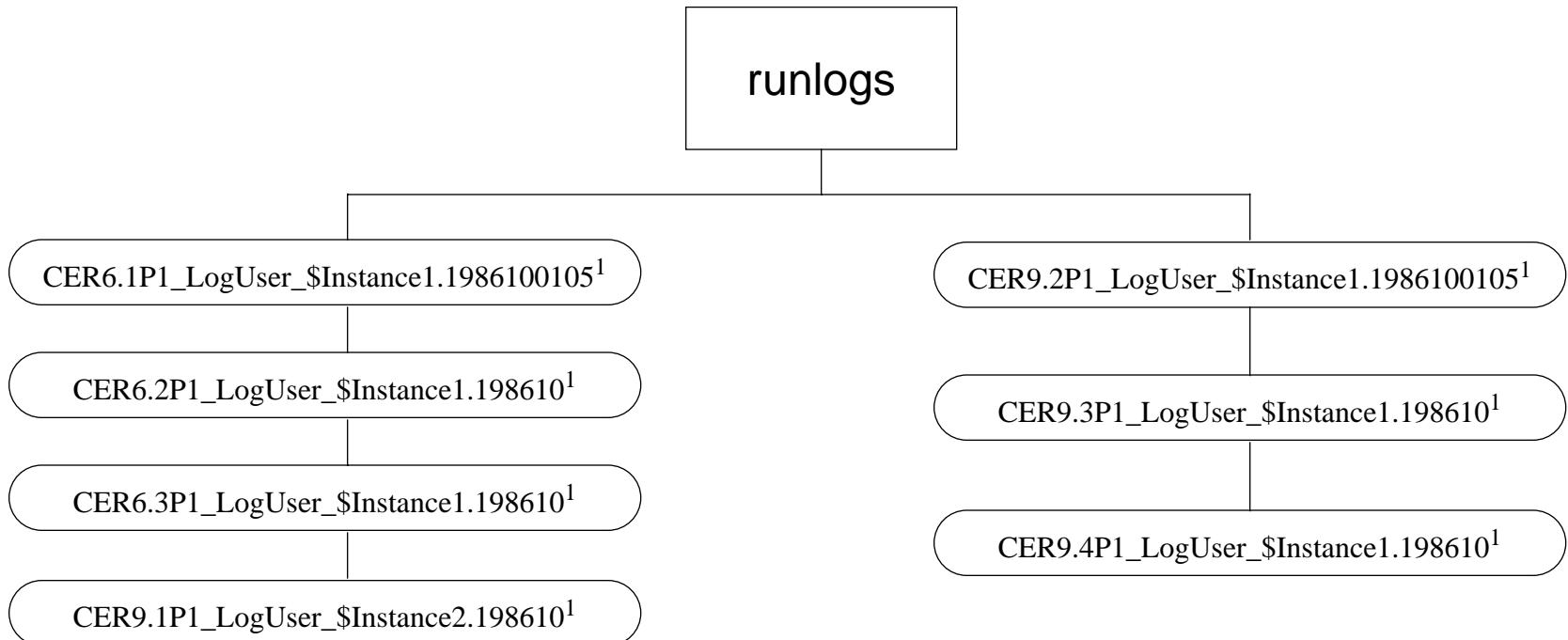
\$Instance2 = 'CERES\_ValidationR1\_000000

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (6 of 43)

## Breakdown of the *tisa\_grid/data/runlogs* Directory

B-7



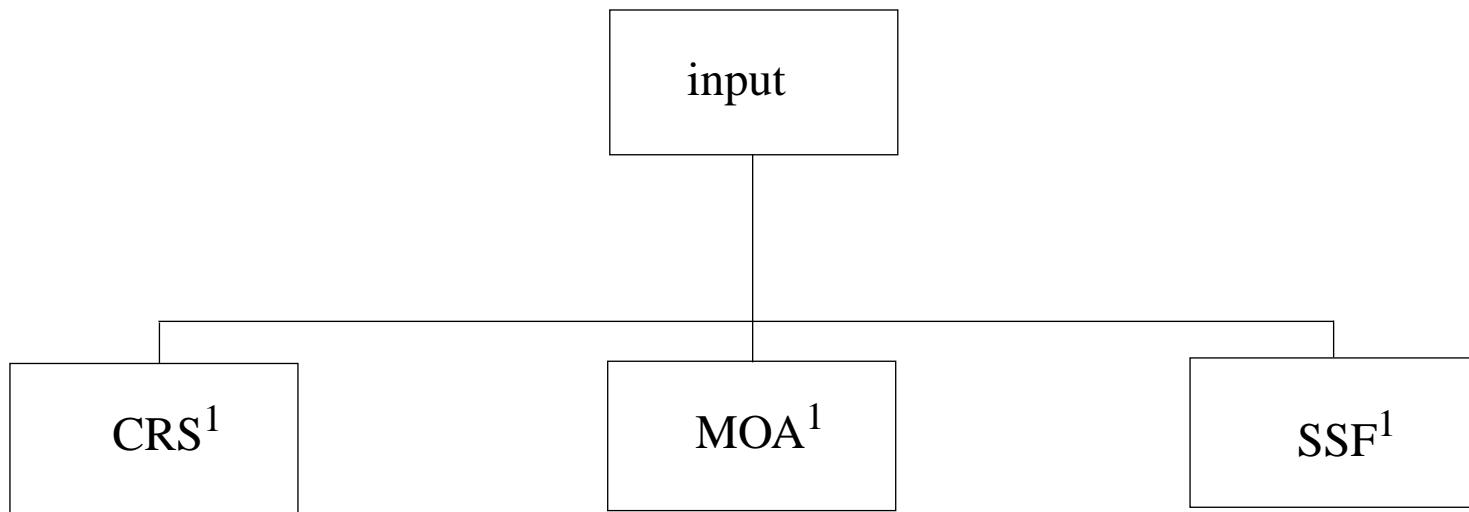
\$Instance1 = 'TRMM-PFM-VIRS\_ValidationR1\_000000

\$Instance2 = 'CERES\_ValidationR1\_000000

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (7 of 43)

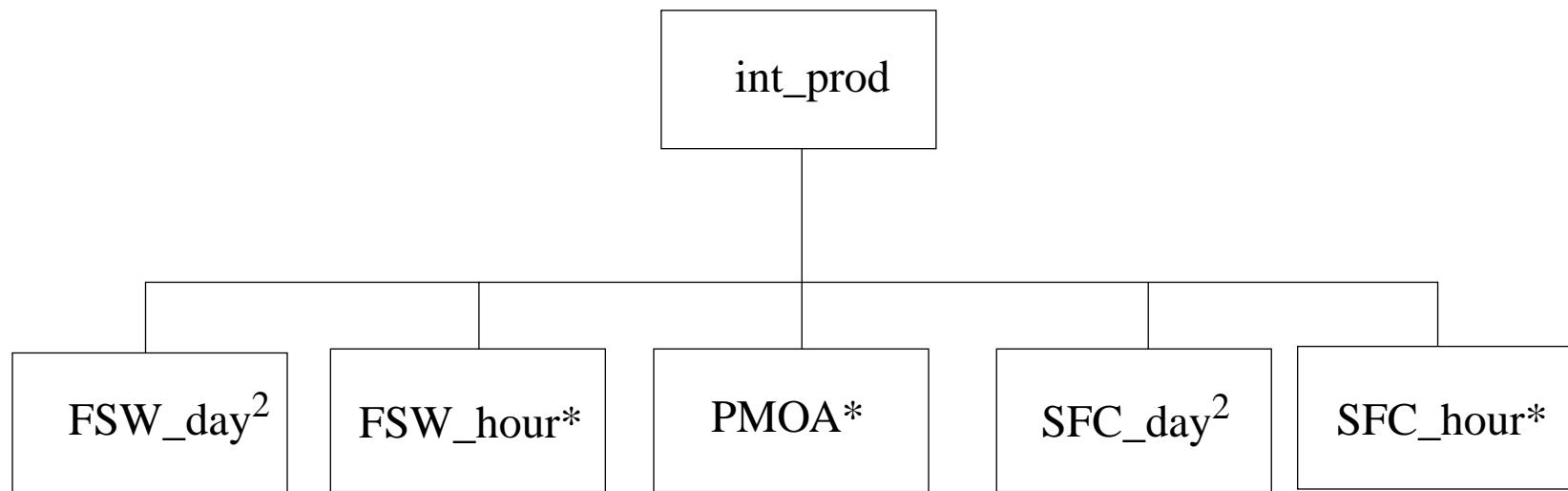
## Breakdown of the *tisa\_grid/data/input* Directory



<sup>1</sup> Input files will be copied from the appropriate test\_suites directory to these directories.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (8 of 43)

## Breakdown of the *tisa\_grid/data/int\_prod* Directory

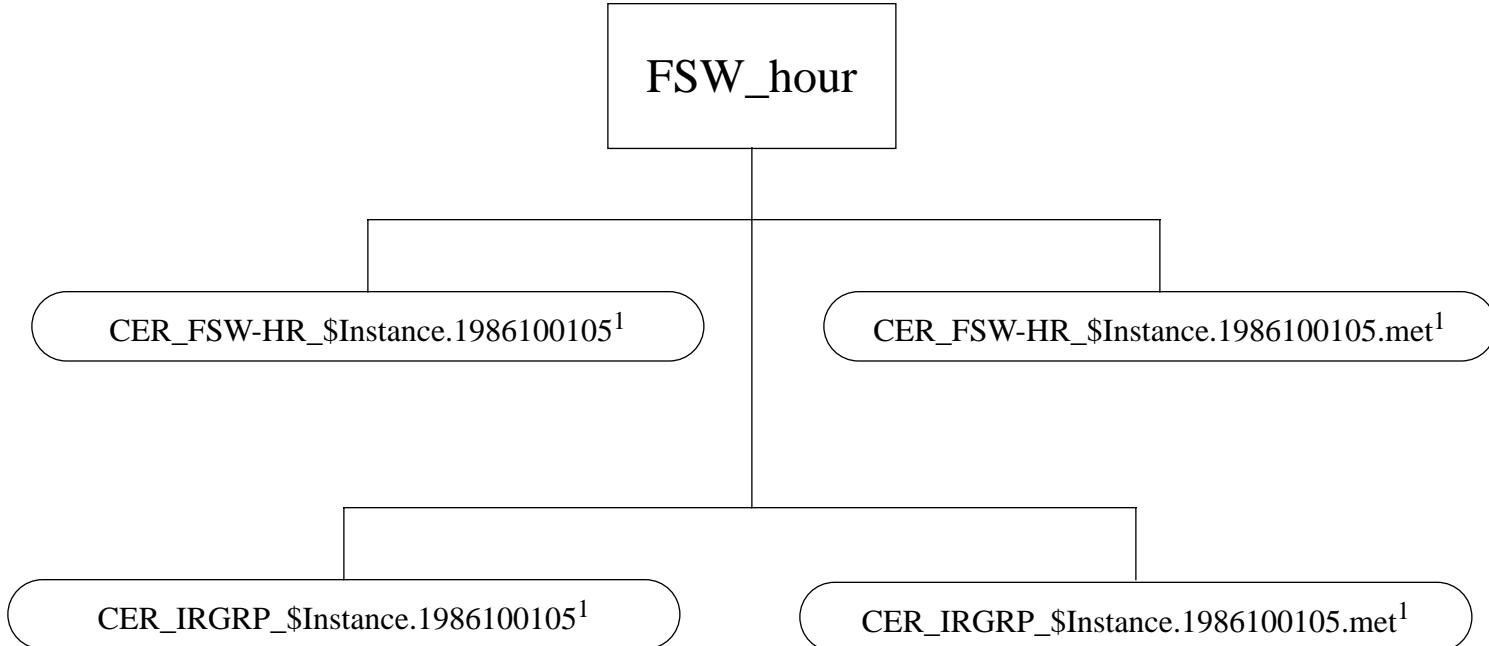


\* Breakdown of subdirectories shown on following pages.

<sup>2</sup> All files will be deleted from these directories upon successful completion.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (9 of 43)

## **Breakdown of the *tisa\_grid/data/int\_prod/FSW\_hour* Directory**

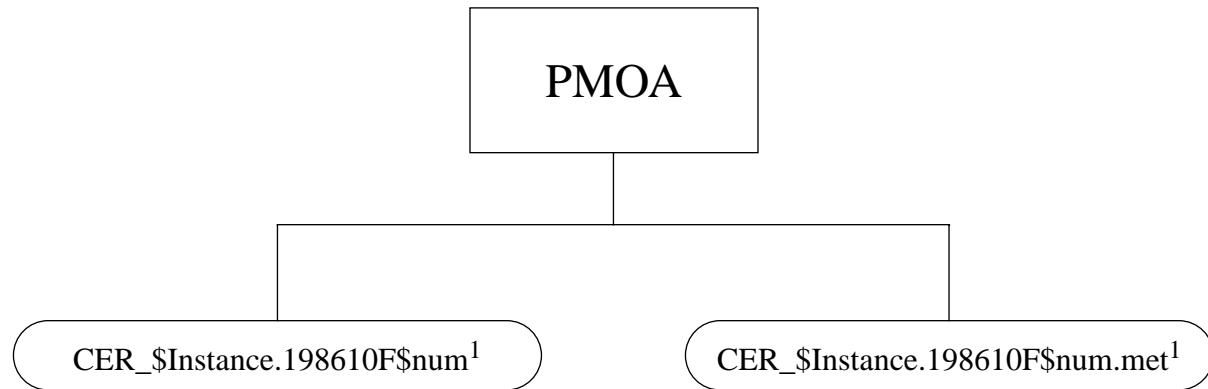


\$Instance = 'TRMM-PFM-VIRS\_ValidationR1\_000000'

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (10 of 43)

## Breakdown of the *tisa\_grid/data/int\_prod/PMOA* Directory



B-11

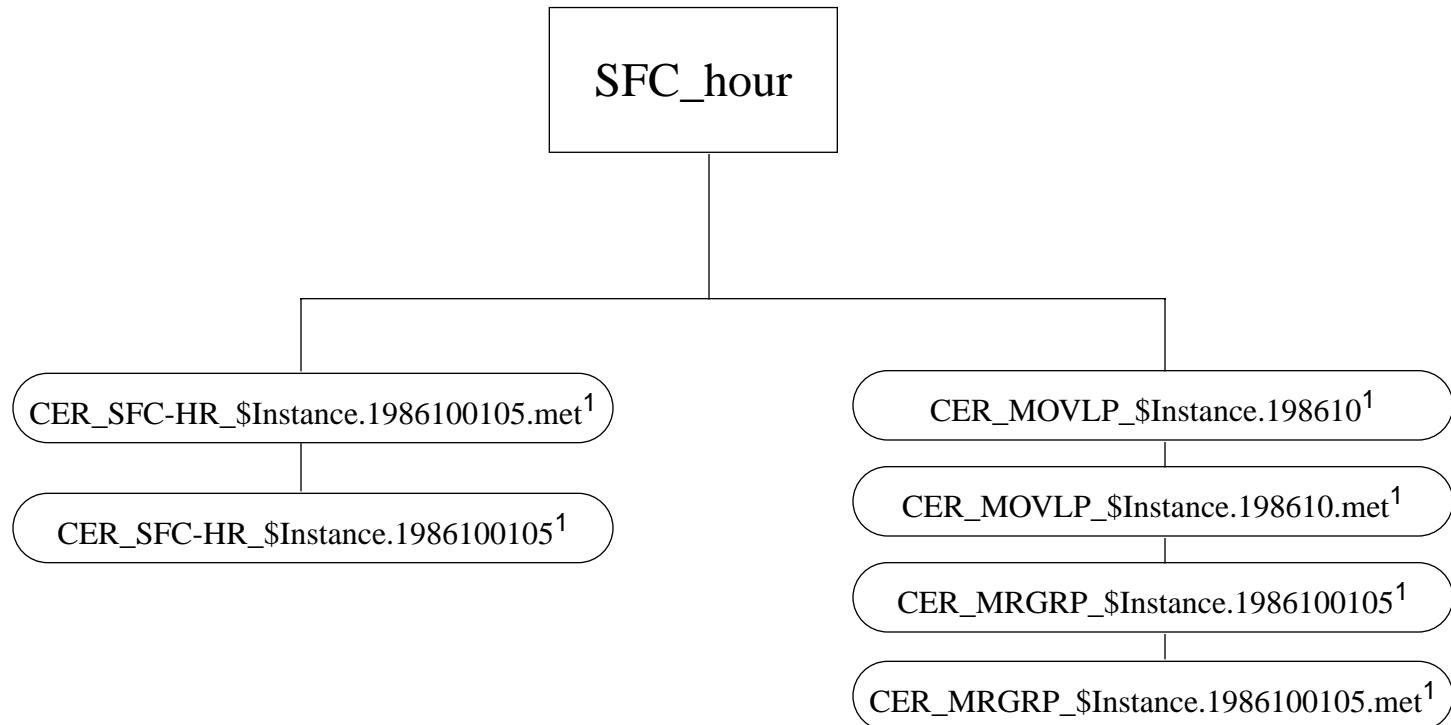
\$Instance = 'PMOA\_CERES\_ValidationR1\_000000'

\$num = i, for 1 = 1,4

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (11 of 43)

## Breakdown of the *tisa\_grid/data/int\_prod/SFC\_hour* Directory



\$Instance = 'TRMM-PFM-VIRS\_ValidationR1\_000000'

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (12 of 43)

## Breakdown of the *tisa\_grid/data/out\_comp* Directory

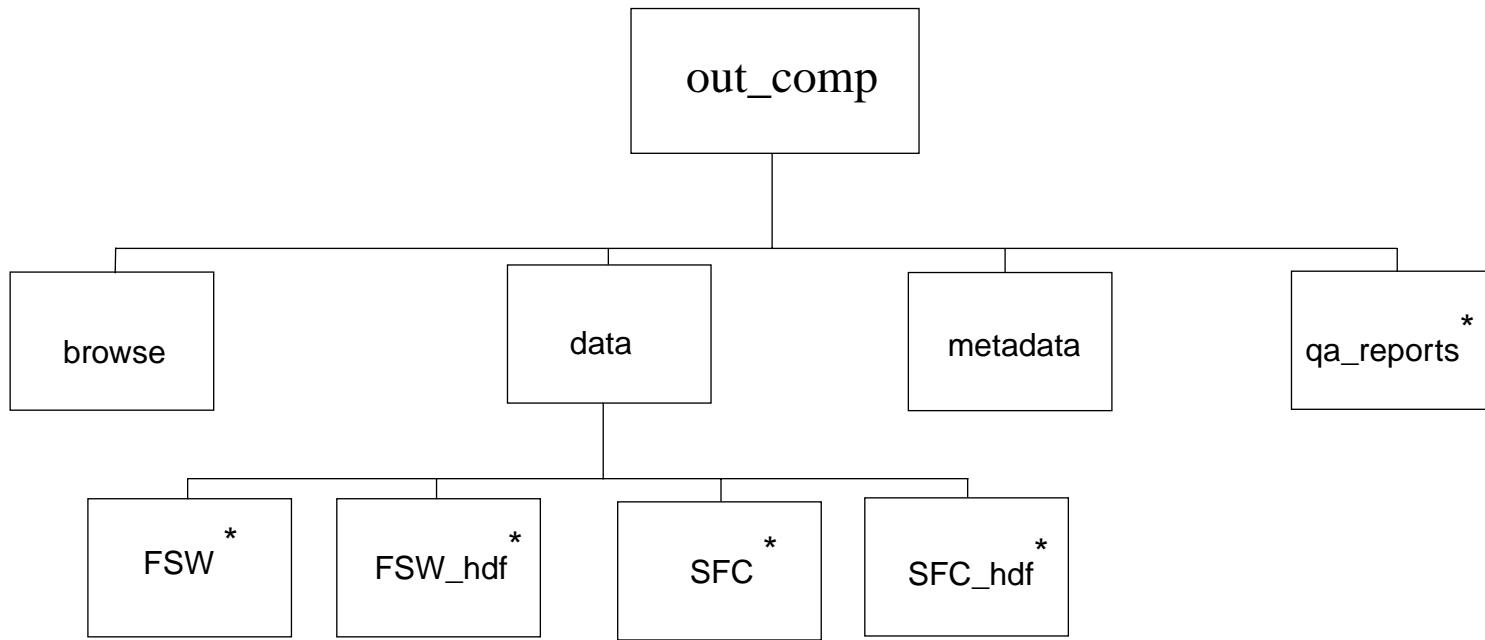
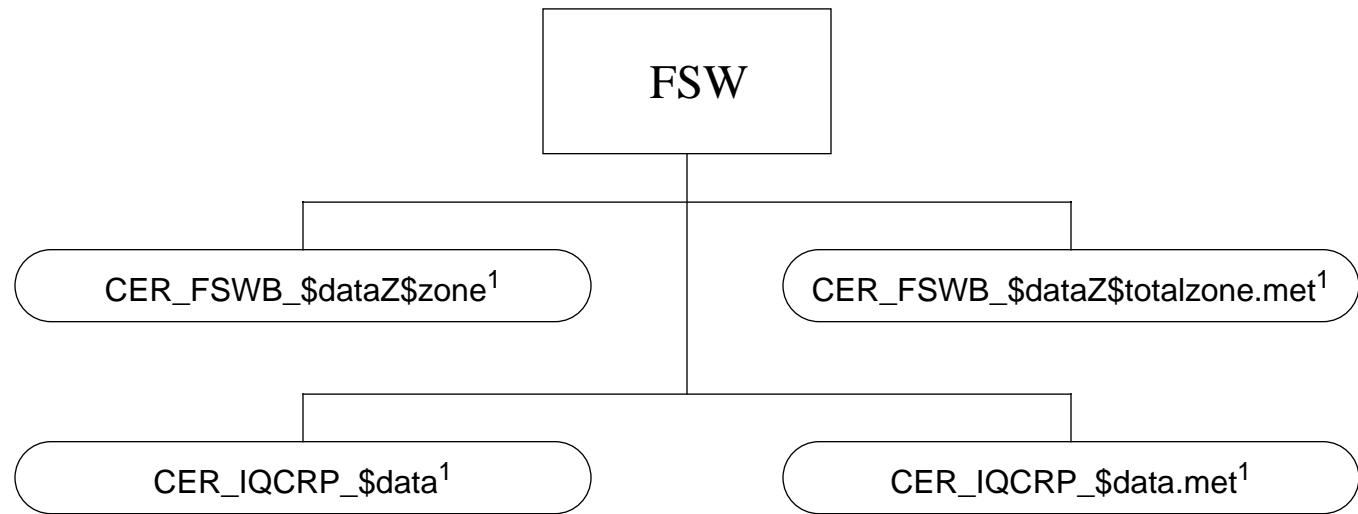


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (13 of 43)

## Breakdown of the *tisa\_grid/data/out\_comp/data/FSW* Directory



B-14

\$totalzone = j, where j = 001 to 180

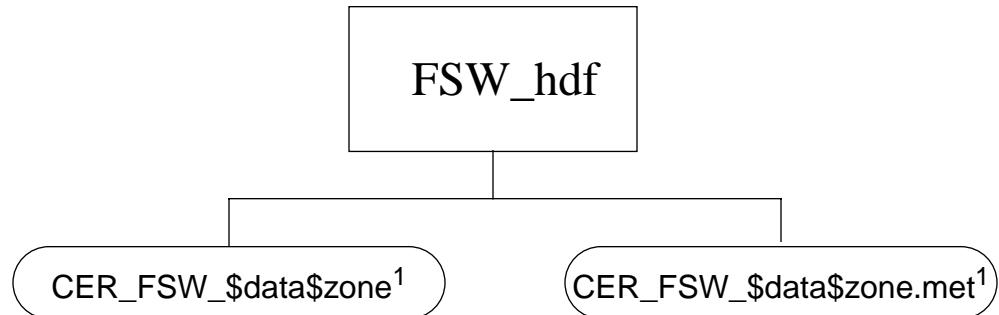
\$zone = i, where i = 001 to 151

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (14 of 43)

## Breakdown of the *tisa\_grid/data/out\_comp/data/FSW\_hdf* Directory



B-15

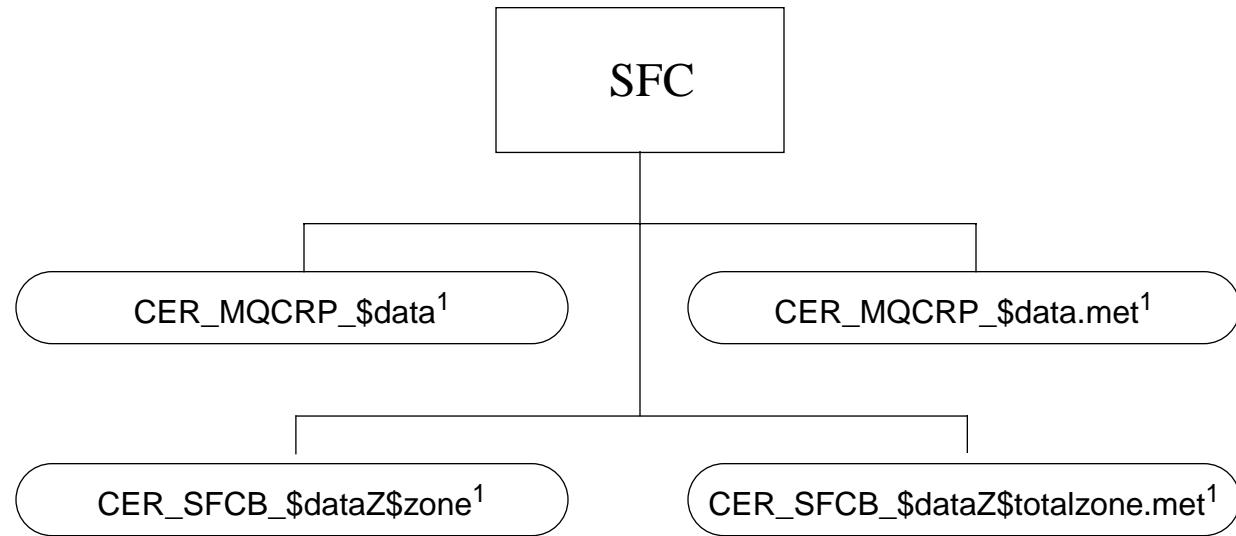
\$zone = i, where i = 01 to 16

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610Z"

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (15 of 43)

## Breakdown of the *tisa\_grid/data/out\_comp/data/SFC* Directory



\$totalzone = j, where j = 001 to 180

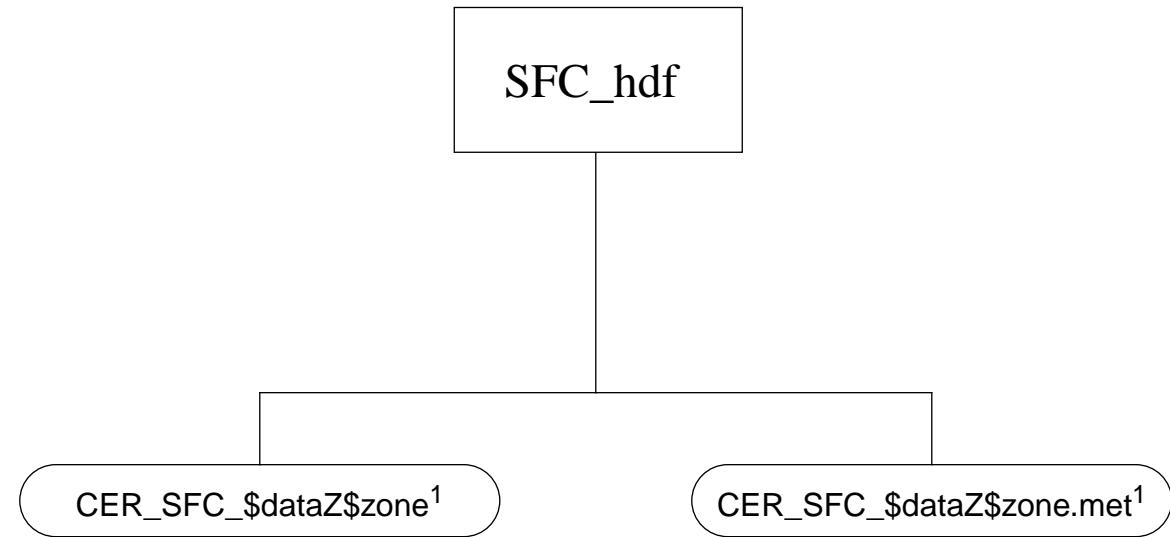
\$zone = i, where i = 001 to 151

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (16 of 43)

## **Breakdown of the *tisa\_grid/data/out\_comp/data/SFC\_hdf* Directory**



\$zone = i, where i = 01 to 16

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (17 of 43)

## Breakdown of the *tisa\_grid/data/out\_exp* Directory

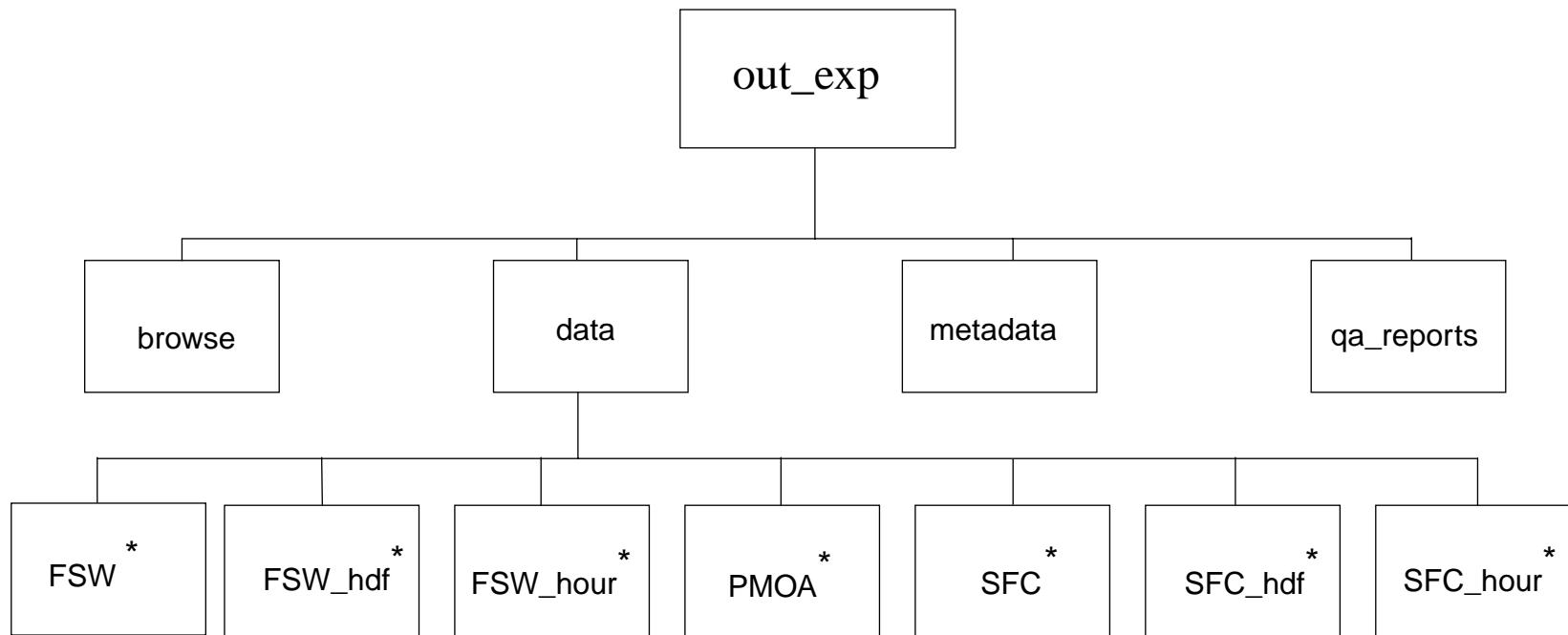
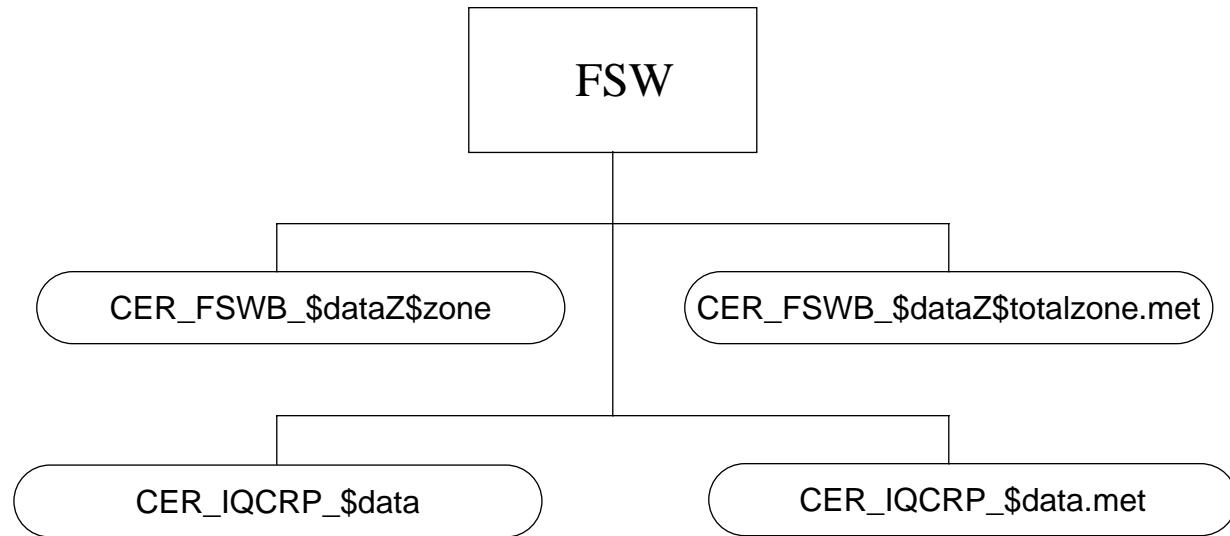


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (18 of 43)

## Breakdown of the *tisa\_grid/data/out\_exp/data/FSW* Directory



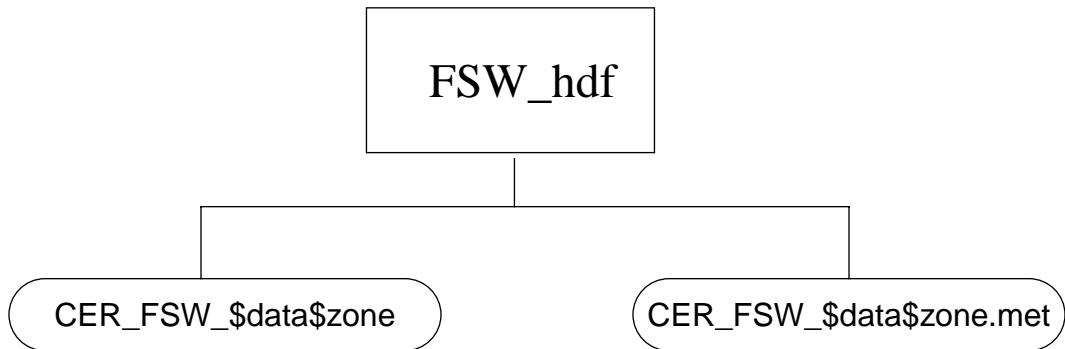
\$totalzone = j, where j = 001 to 180

\$zone = i, where i = 001 to 151

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (19 of 43)

## **Breakdown of the *tisa\_grid/data/out\_exp/data/FSW\_hdf* Directory**



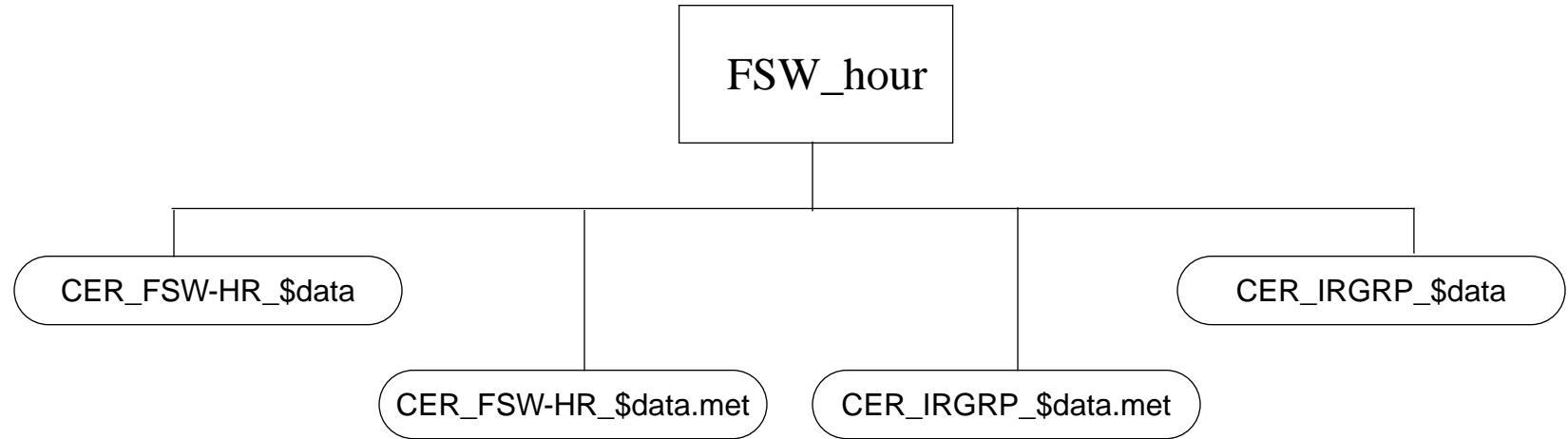
B-20

\$zone = i, where i = 01 to 16

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610Z"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (20 of 43)

## **Breakdown of the *tisa\_grid/data/out\_exp/data/FSW\_hour* Directory**

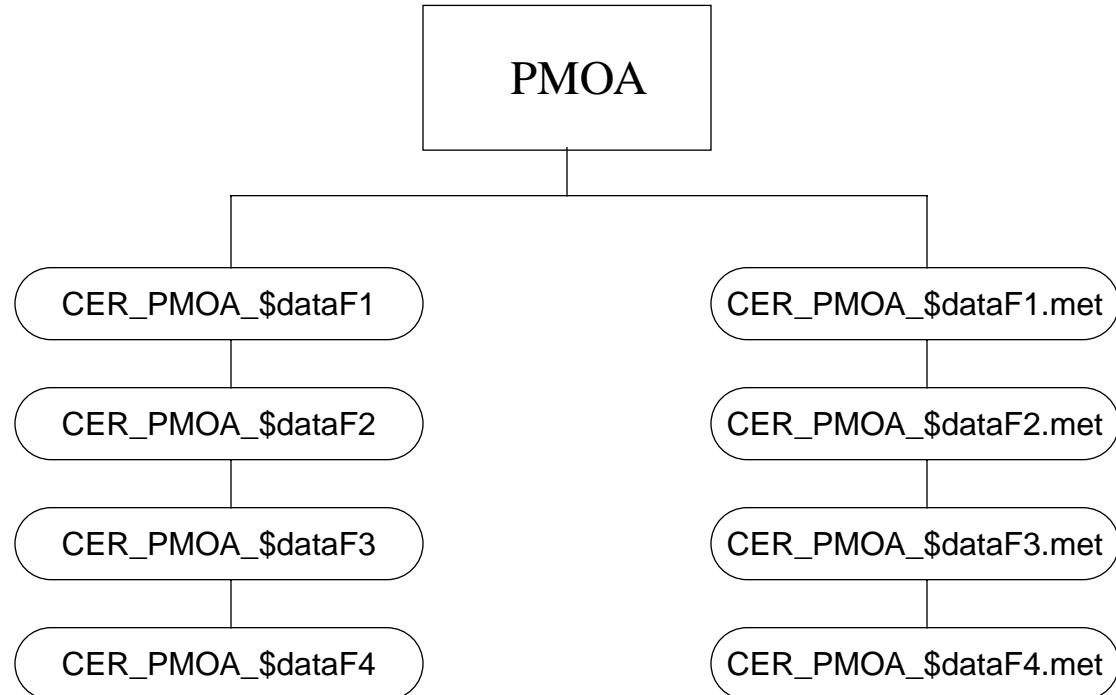


B-21

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.1986100105"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (21 of 43)

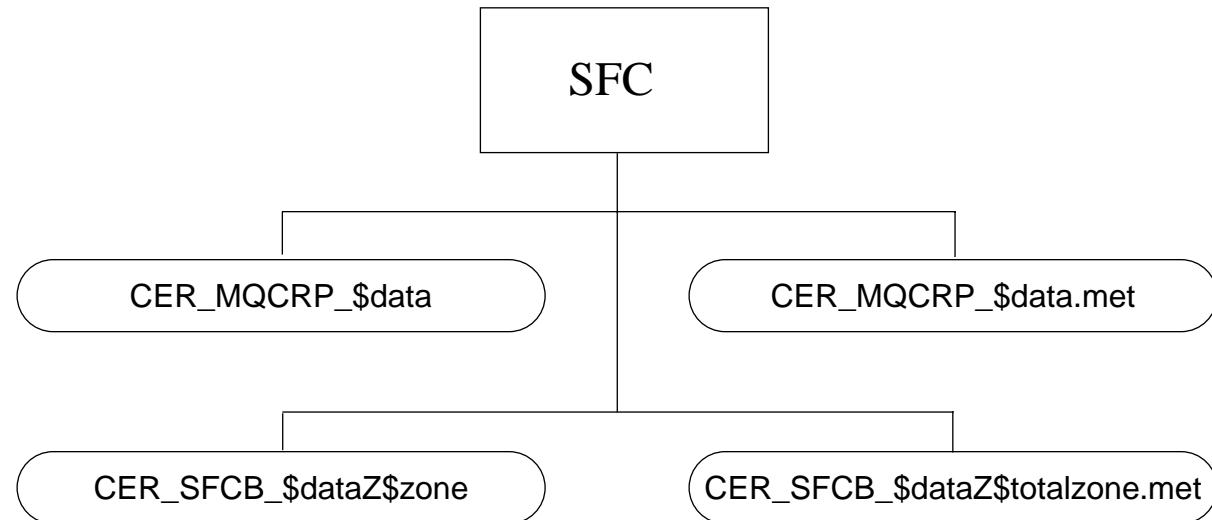
## Breakdown of the *tisa\_grid/data/out\_exp/data/PMOA* Directory



\$data ="CERES\_ValidationR1\_000000.198610"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (22 of 43)

## Breakdown of the *tisa\_grid/data/out\_exp/data/SFC* Directory



B-23

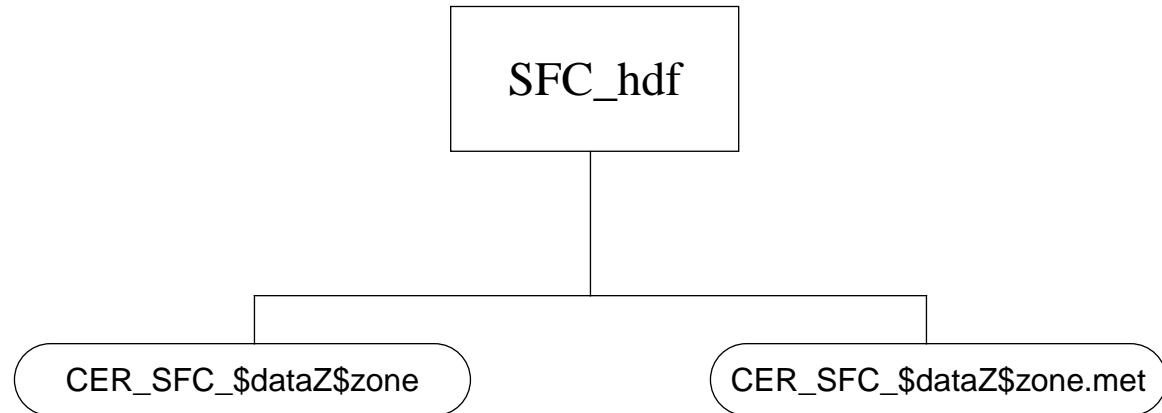
\$totalzone = j, where j = 001 to 180

\$zone = i, where i = 001 to 151

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (23 of 43)

## **Breakdown of the *tisa\_grid/data/out\_exp/data/SFC\_hdf* Directory**



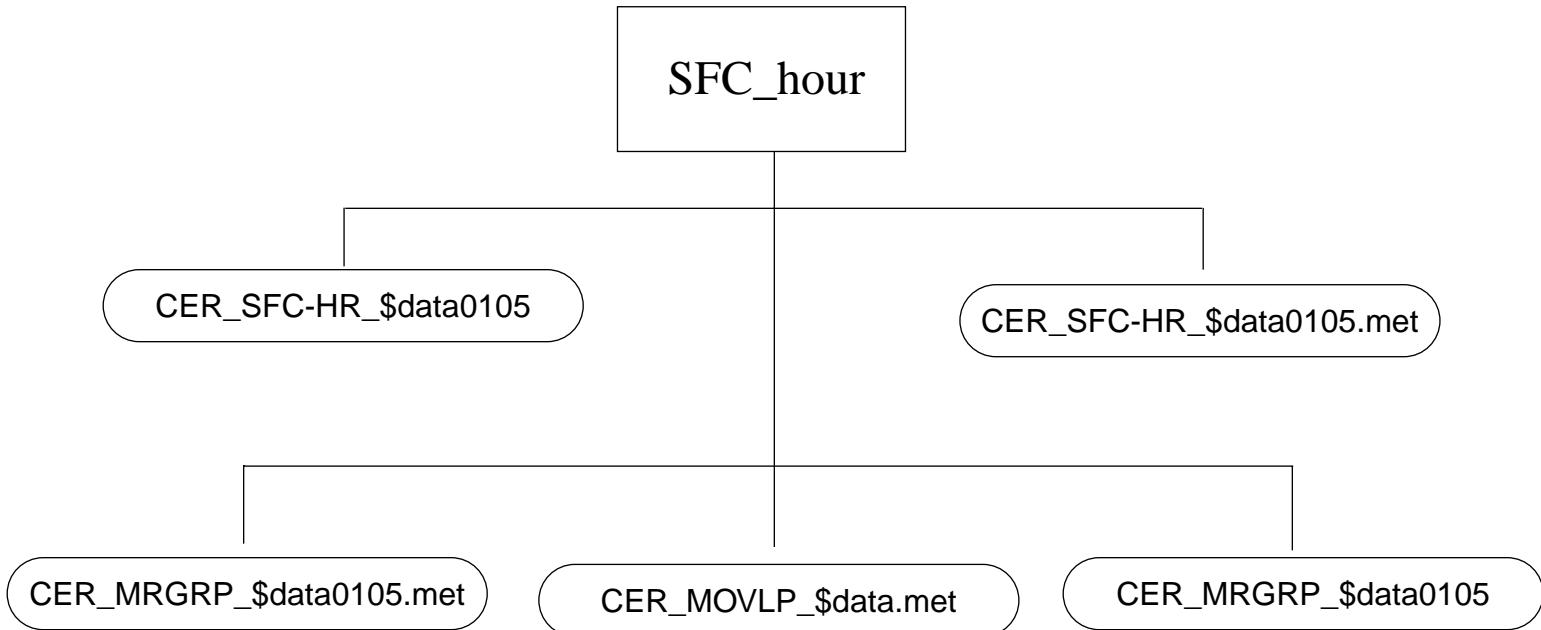
B-24

\$zone = i, where i = 01 to 16

\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (24 of 43)

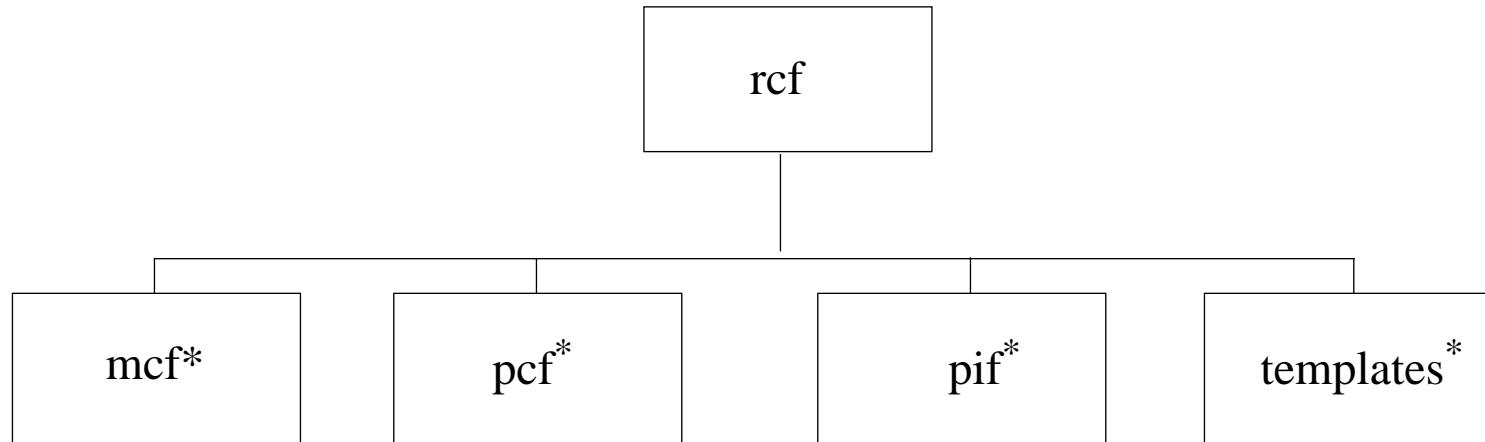
## **Breakdown of the *tisa\_grid/data/out\_exp/data/SFC\_hour* Directory**



\$data = "TRMM-PFM-VIRS\_ValidationR1\_000000.198610"

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (25 of 43)

## **Breakdown of the *tisa\_grid/rcf* Directory**



\* Breakdown of subdirectories shown on following pages.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (26 of 43)

## Breakdown of the *tisa\_grid/rcf/mcf* Directory

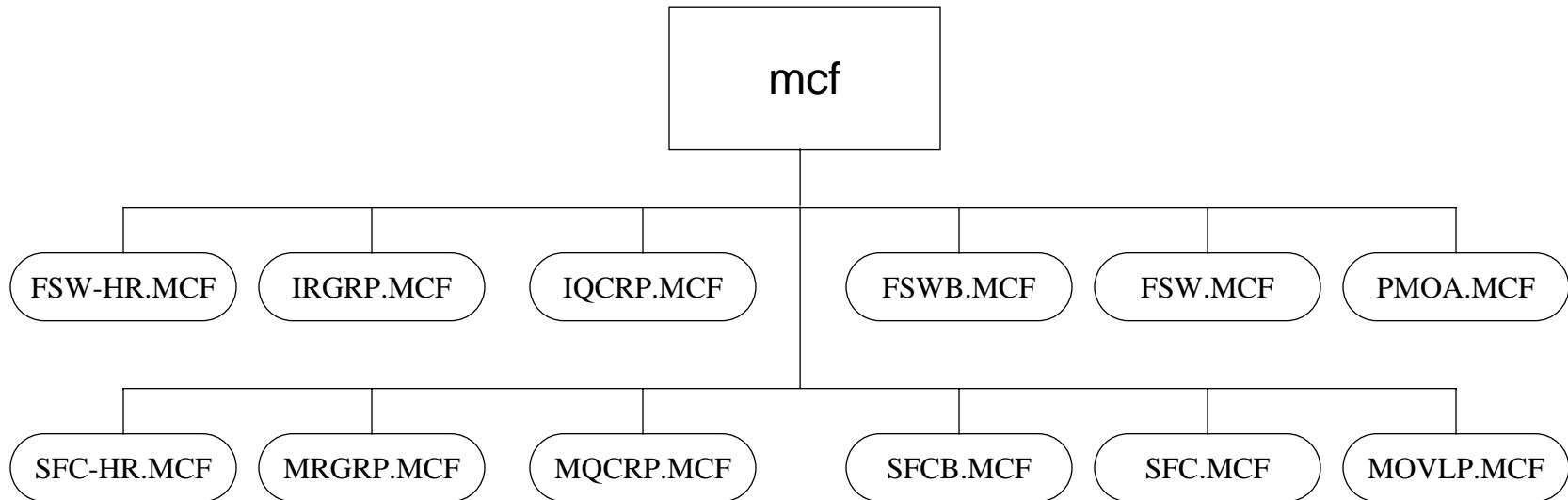
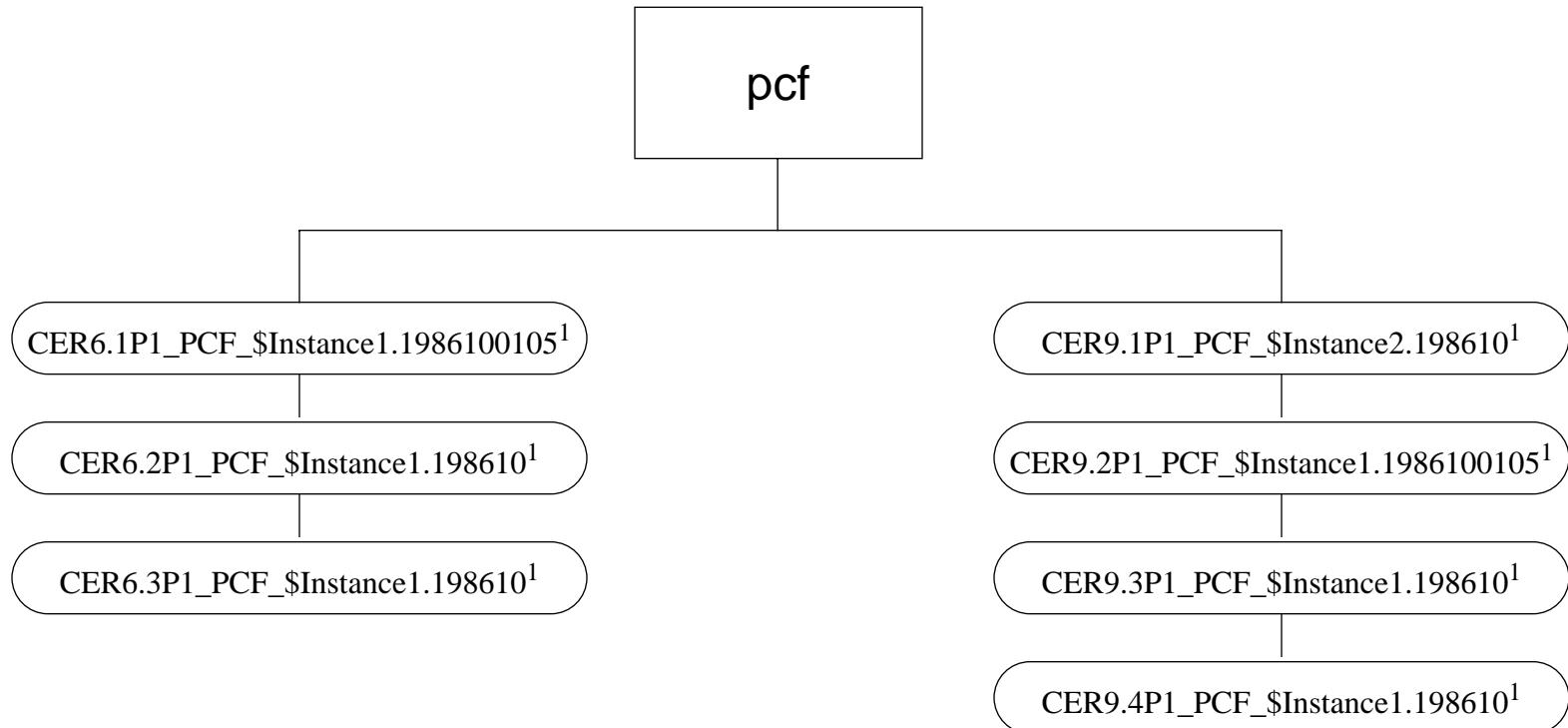


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (27 of 43)

## Breakdown of the *tisa\_grid/rcf/pcf* Directory



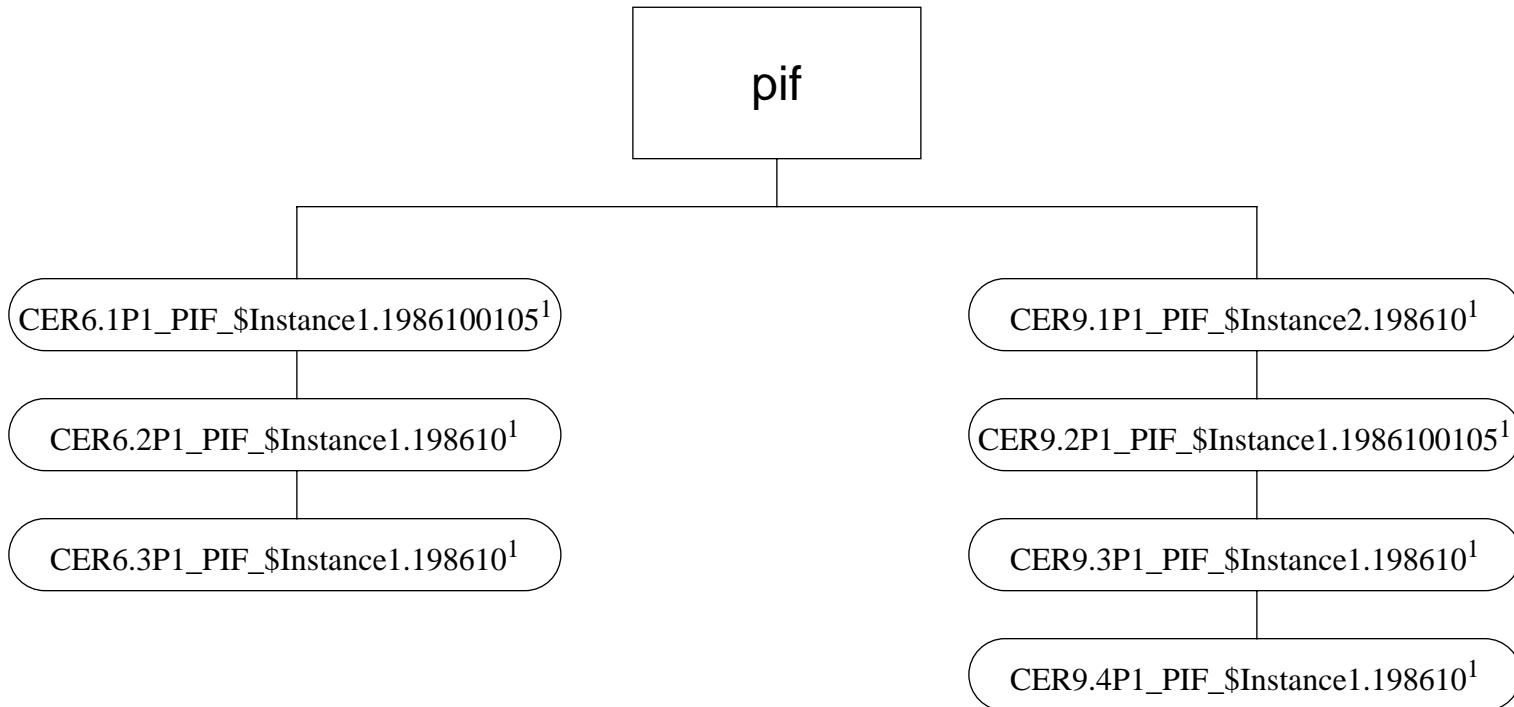
\$Instance1 = 'TRMM-PFM-VIRS\_ValidationR1\_000000'

\$Instance2 = 'CERES\_ValidationR1\_000000'

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (28 of 43)

## Breakdown of the *tisa\_grid/rcf/pif* Directory



B-29

\$Instance1 = 'TRMM-PFM-VIRS\_ValidationR1\_000000'

\$Instance2 = 'CERES\_ValidationR1\_000000'

<sup>1</sup>These files are not included in the tar file, but will be produced by the Subsystem software.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (29 of 43)

## Breakdown of the *tisa\_grid/rcf/templates* Directory

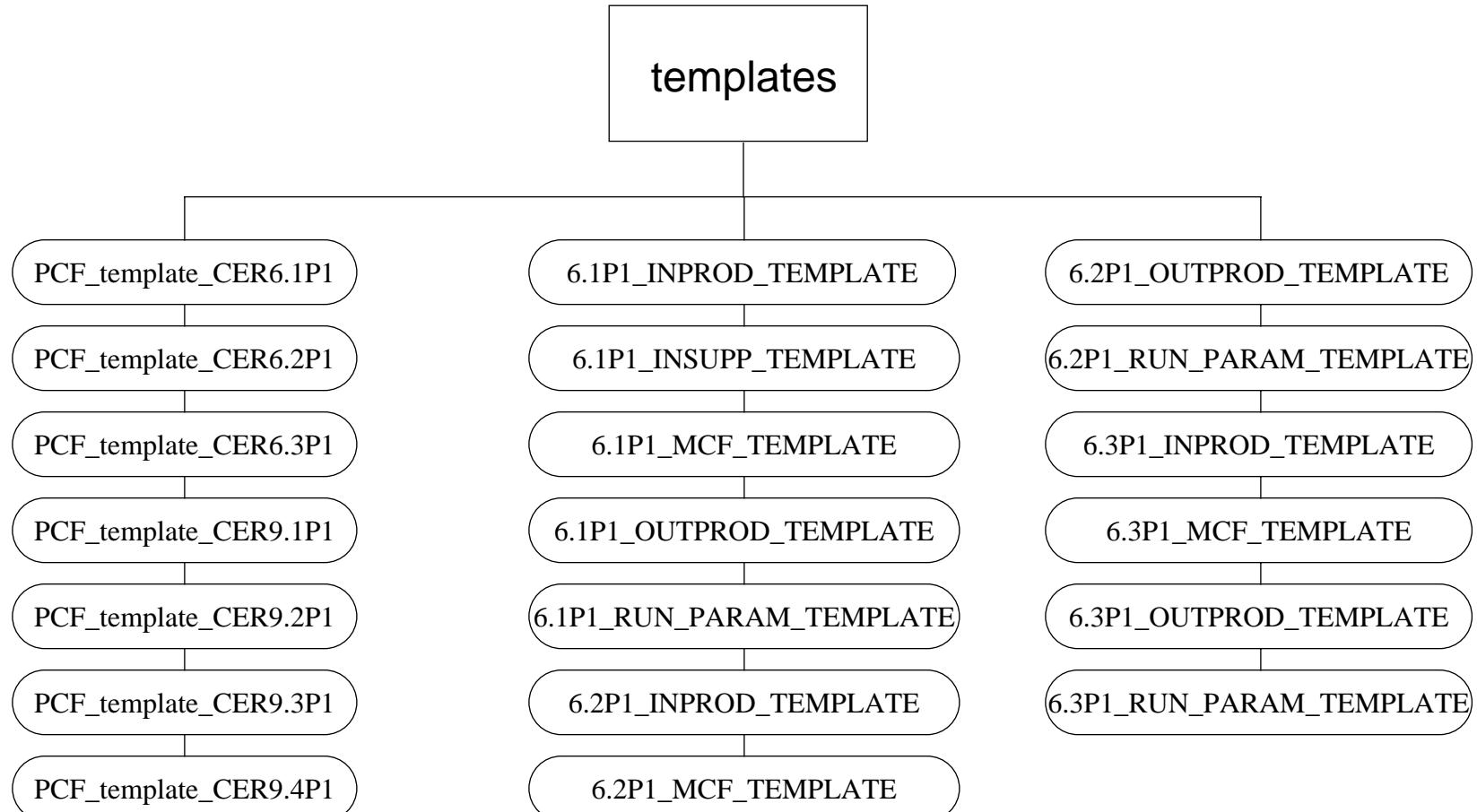


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (30 of 43)

## Breakdown of the *tisa\_grid/rcf/templates* Directory (continued)

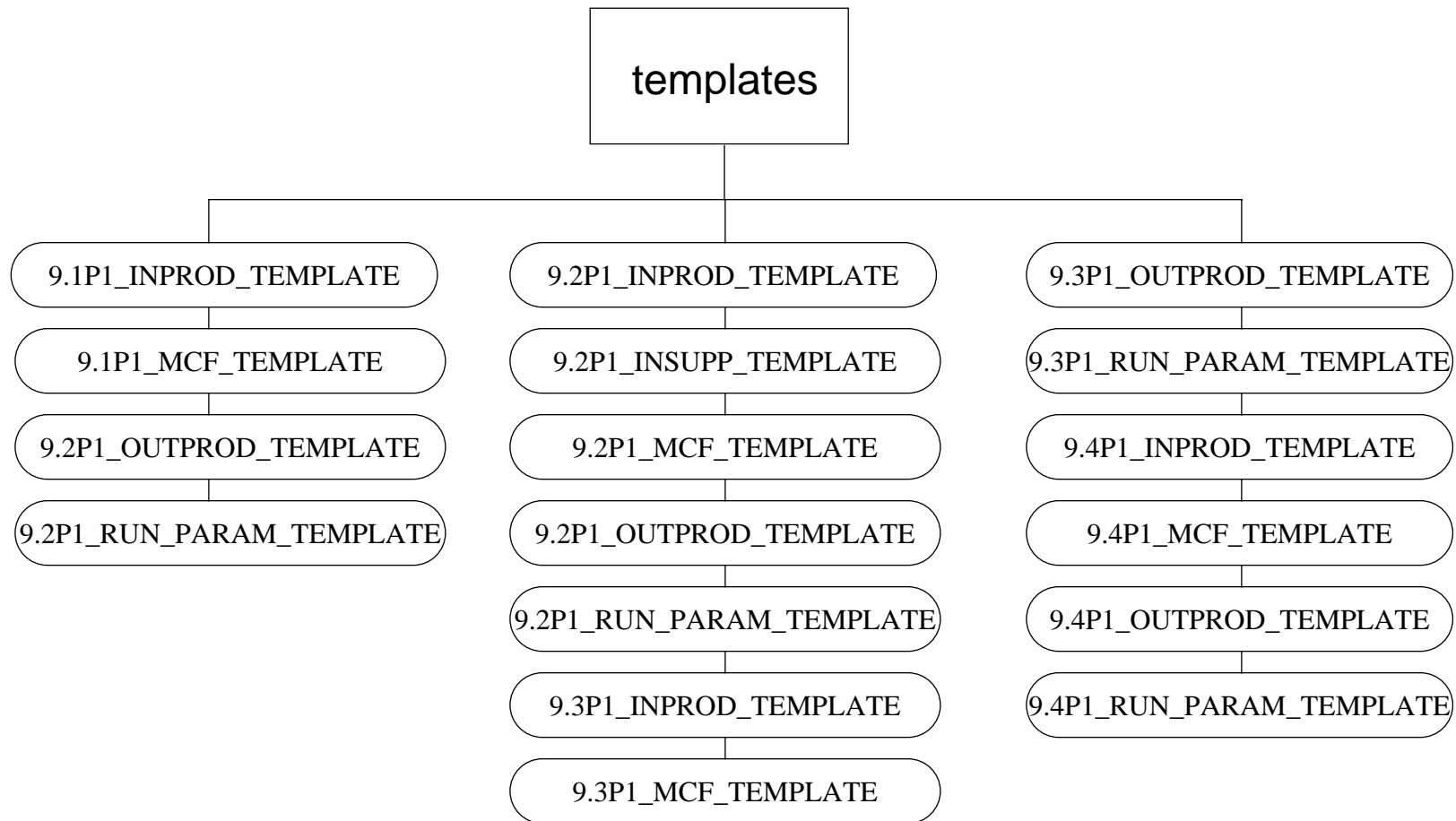


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (31 of 43)

## Breakdown of the *tisa\_grid*/smf Directory

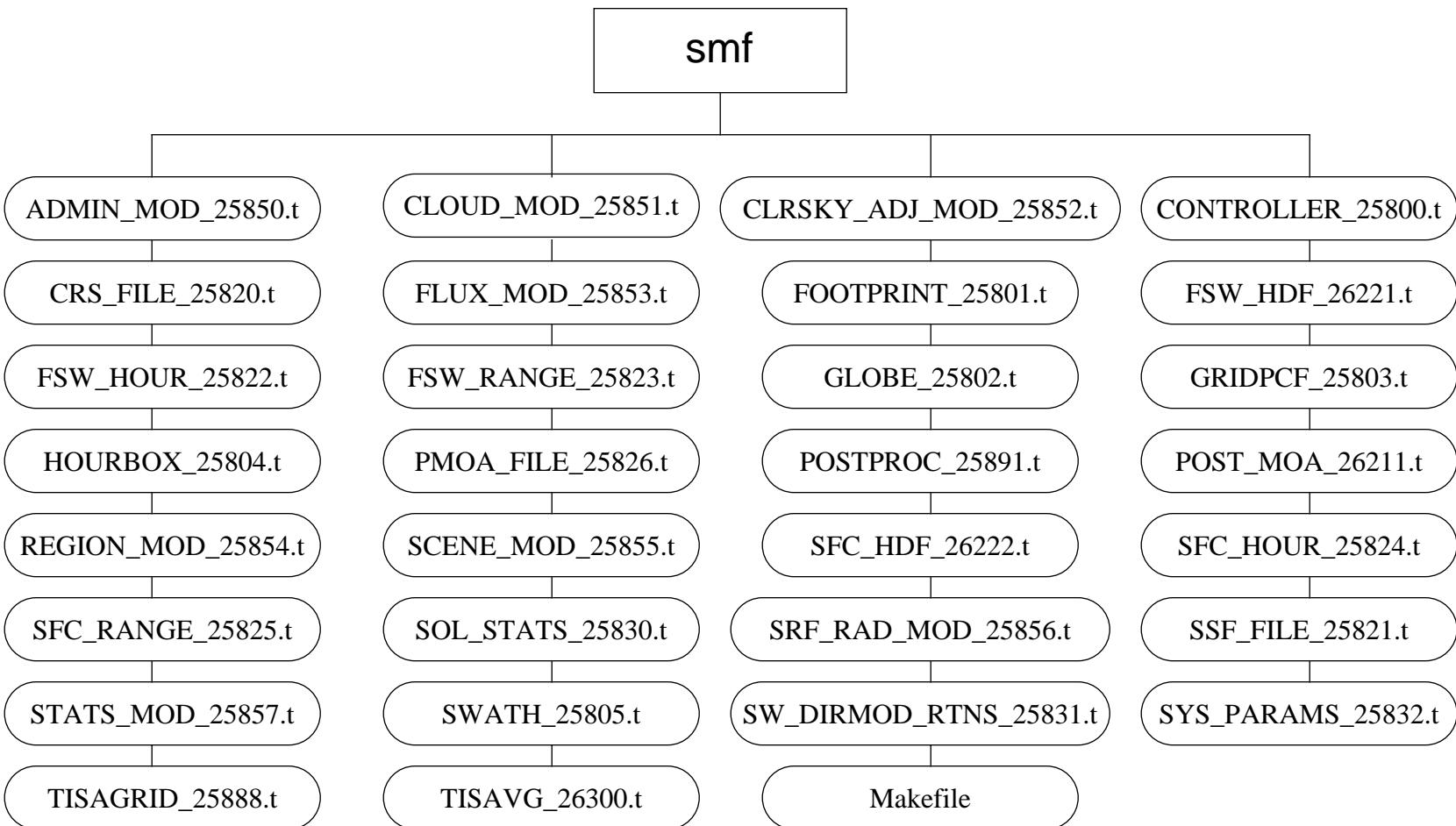
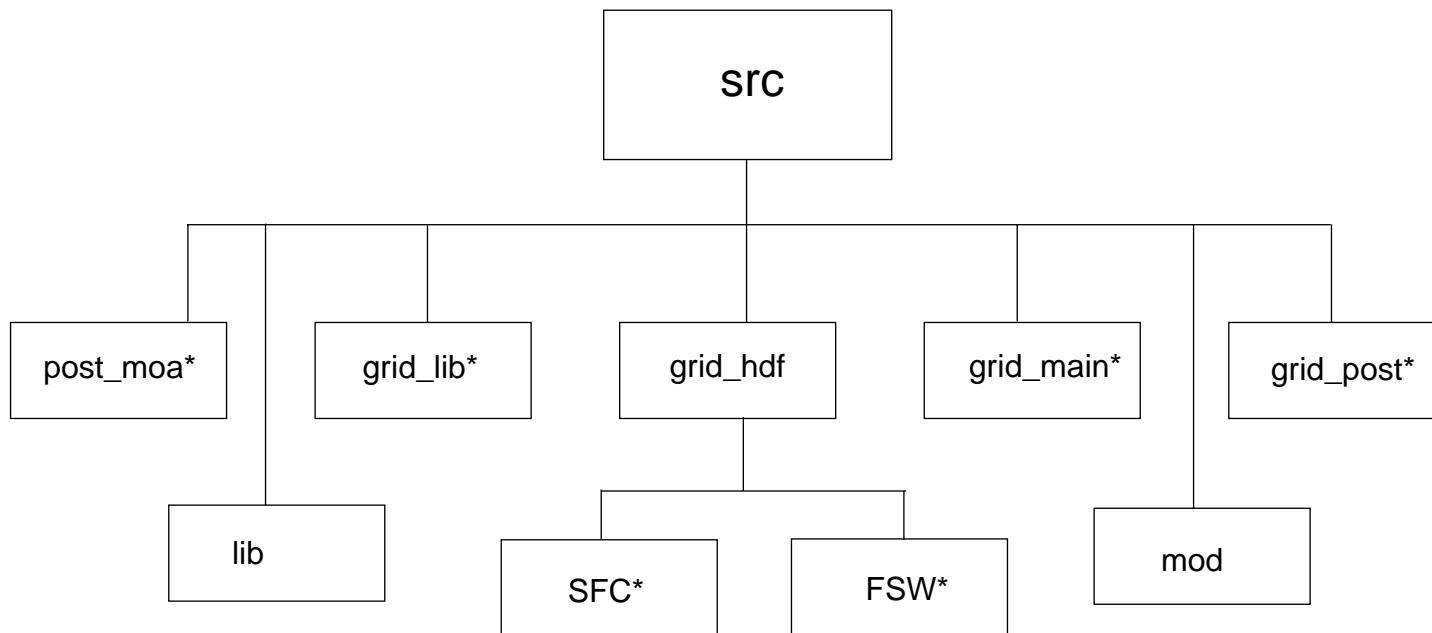


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (32 of 43)

## Breakdown of the *tisa\_grid/src* Directory



\* Breakdown of subdirectories shown on following pages.

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (33 of 43)

## **Breakdown of the *tisa\_grid/src/grid\_hdf/FSW* Directory**

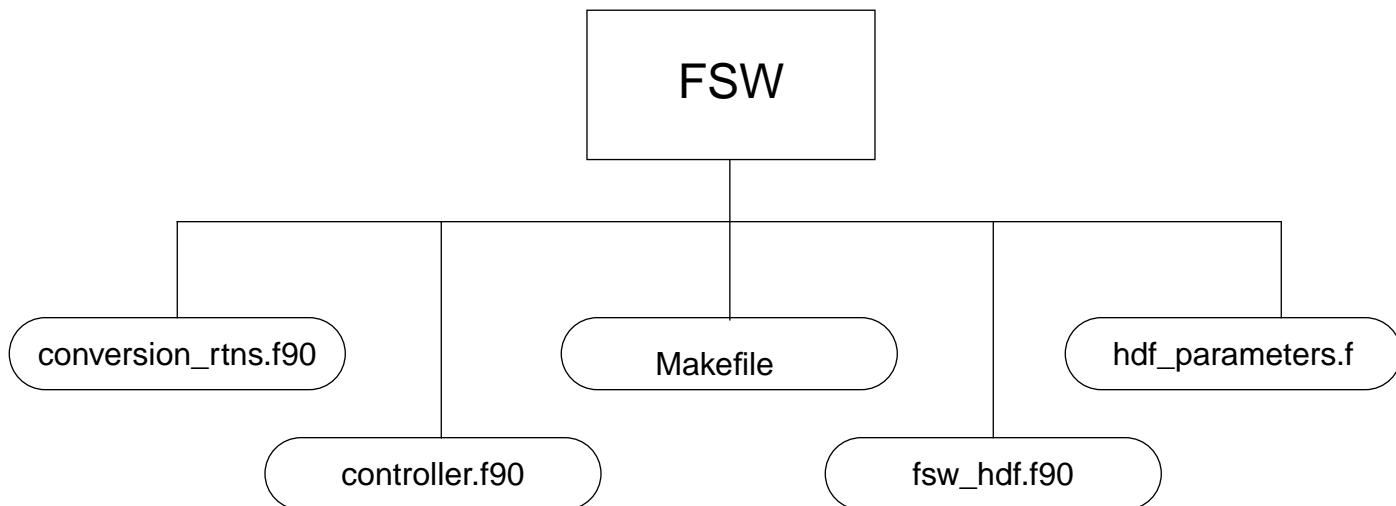


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (34 of 43)

## **Breakdown of the *tisa\_grid/src/grid\_hdf/SFC* Directory**

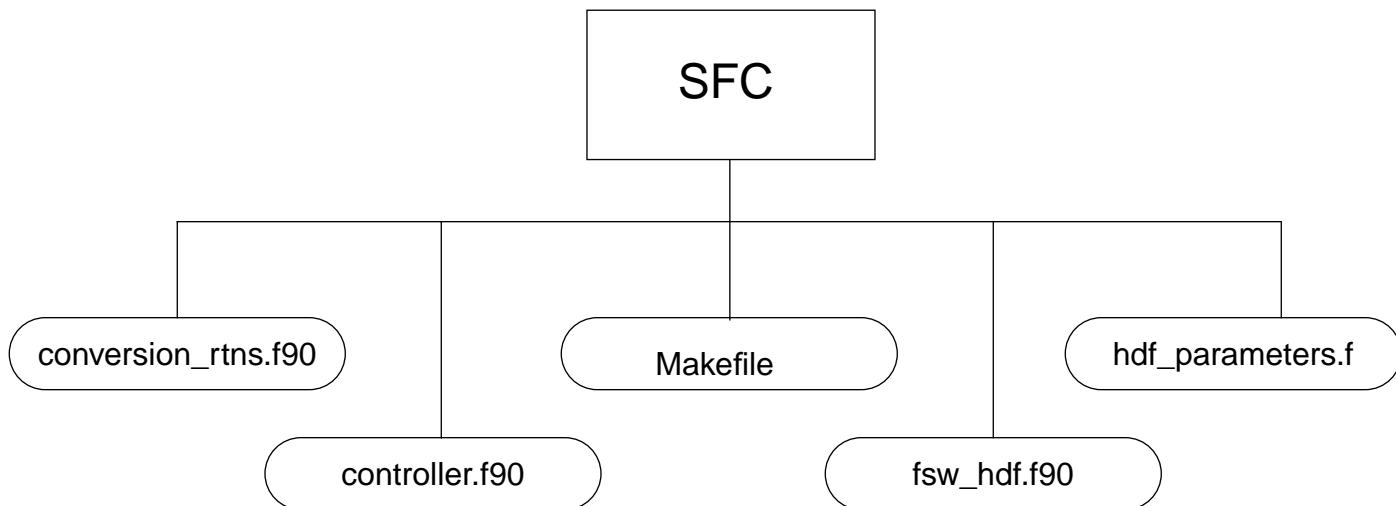


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (35 of 43)

## **Breakdown of the *tisa\_grid/src/grid\_lib* Directory**

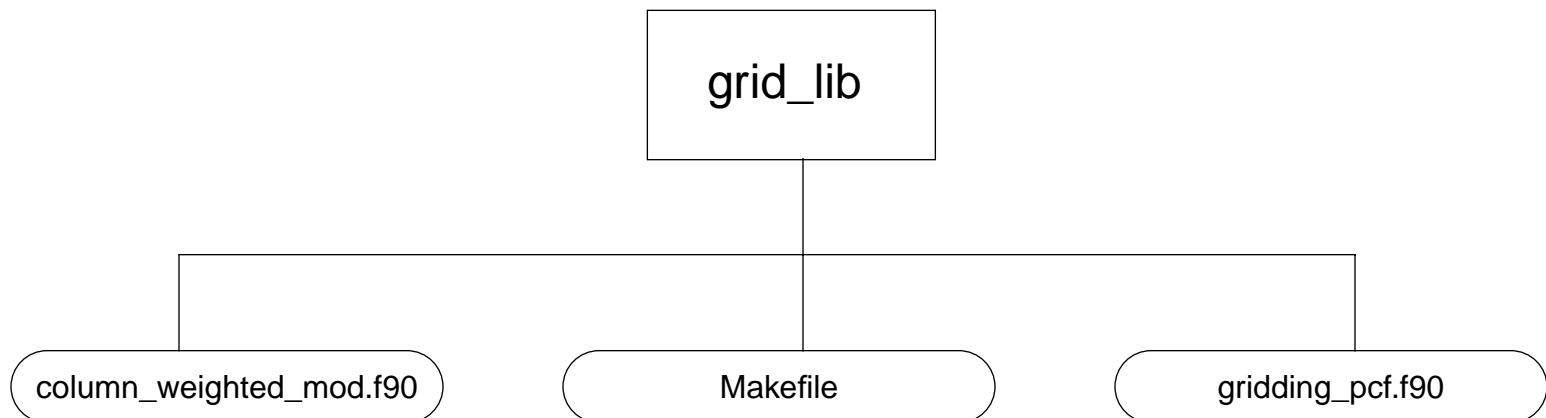


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (36 of 43)

## Breakdown of the *tisa\_grid/src/grid\_main* Directory

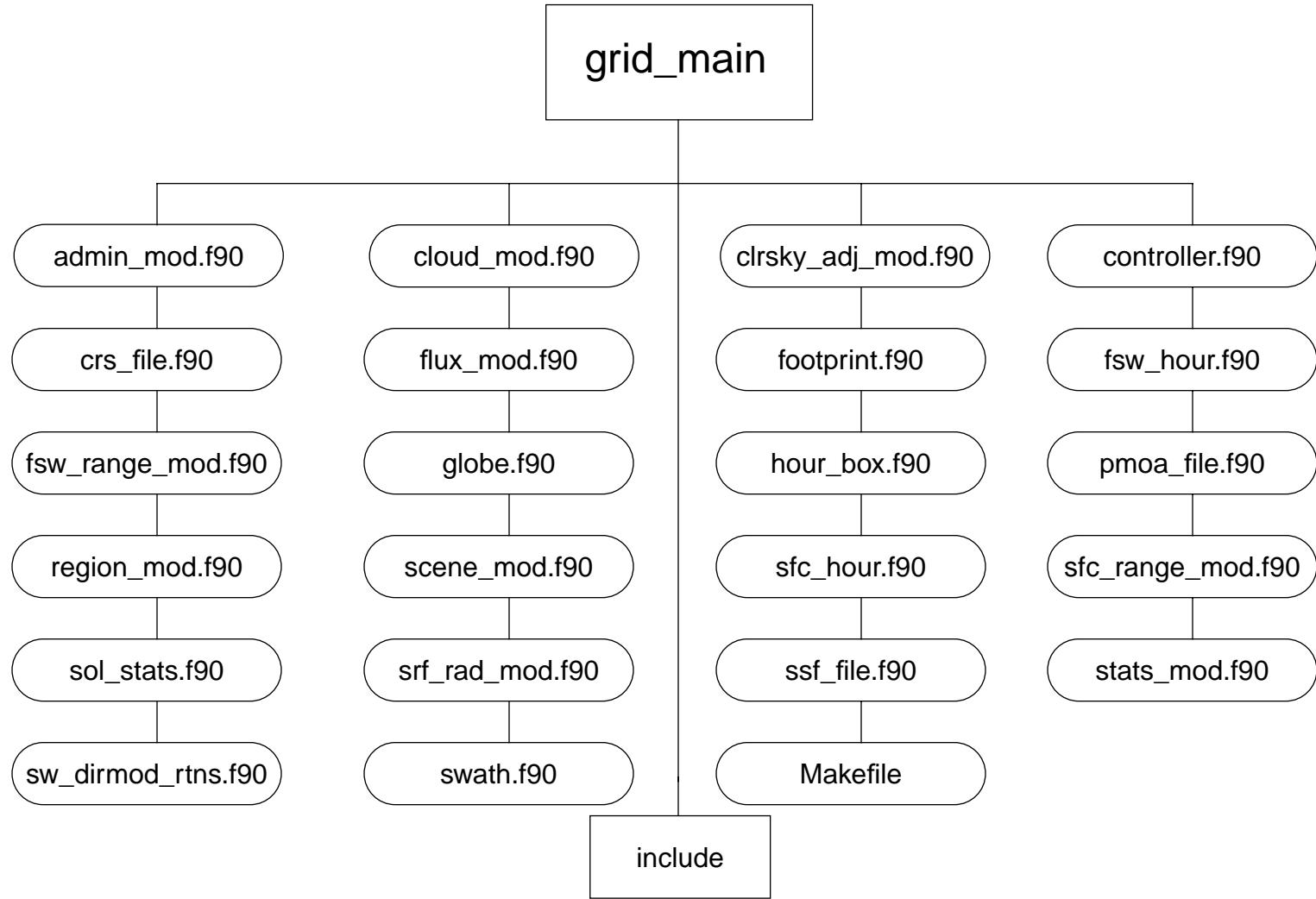


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (37 of 43)

## **Breakdown of the *tisa\_grid/src/grid\_post* Directory**

B-38

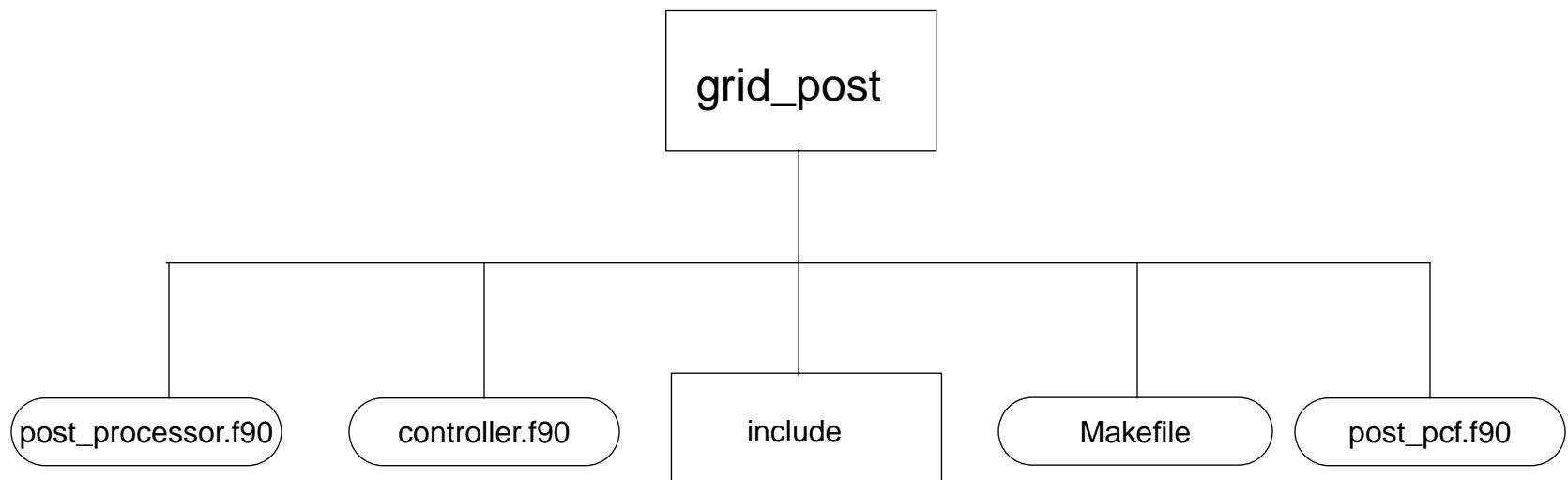


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (38 of 43)

## **Breakdown of the *tisa\_grid/src/post\_moa* Directory**

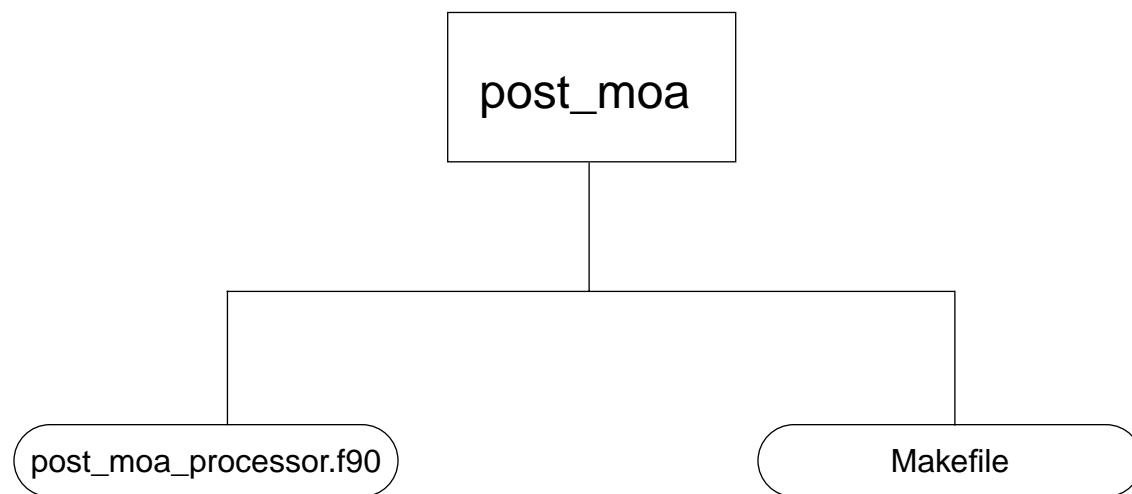
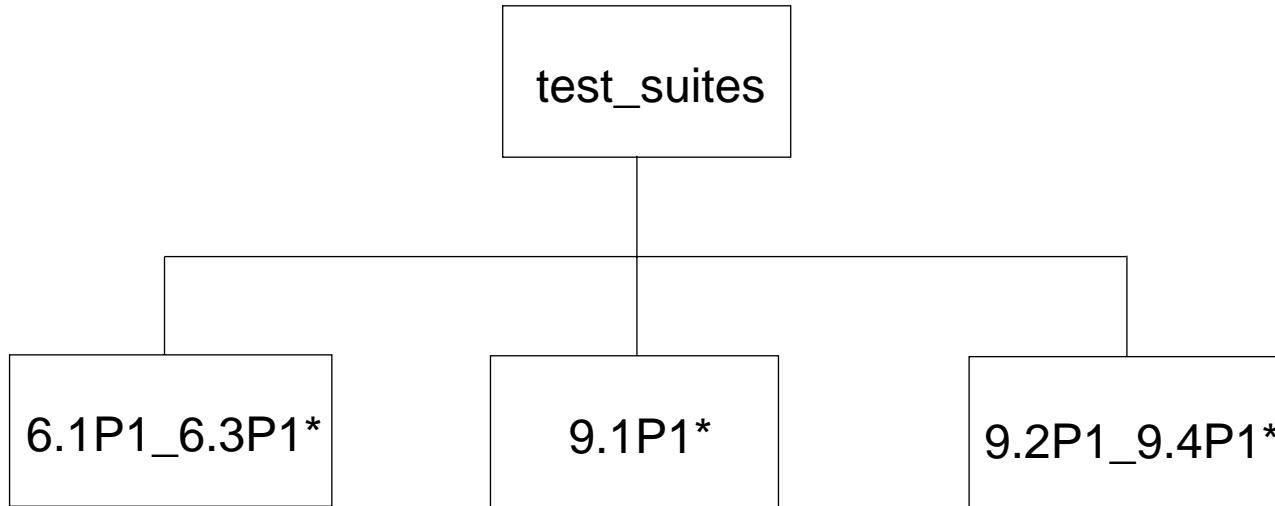


Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (39 of 43)

## **Breakdown of the *tisa\_grid/test\_suites* Directory**

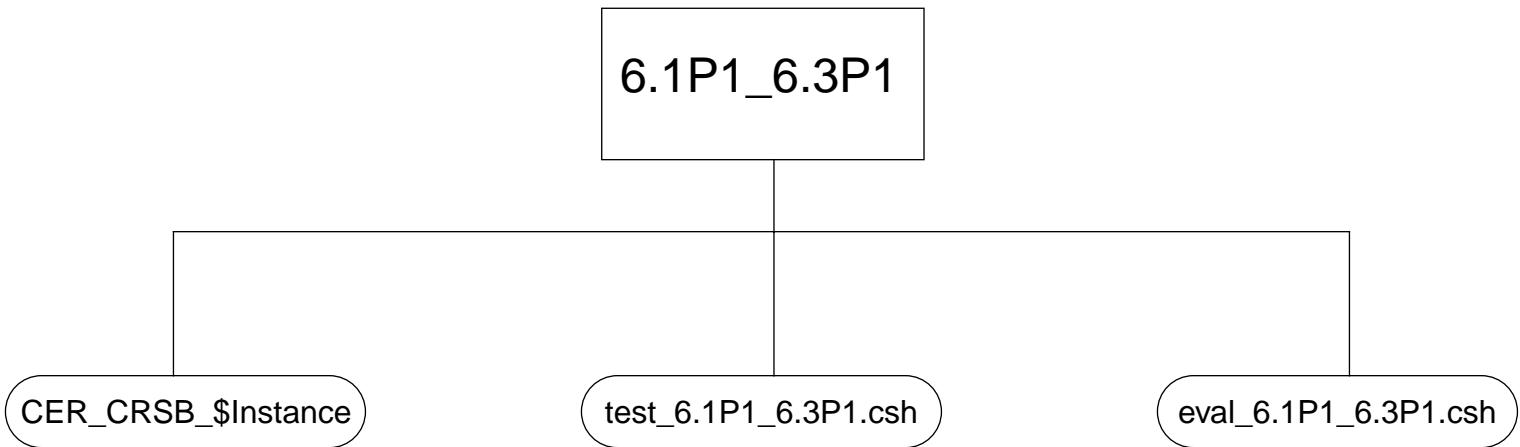


B-40

\* Breakdown of subdirectories shown on following pages

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (40 of 43)

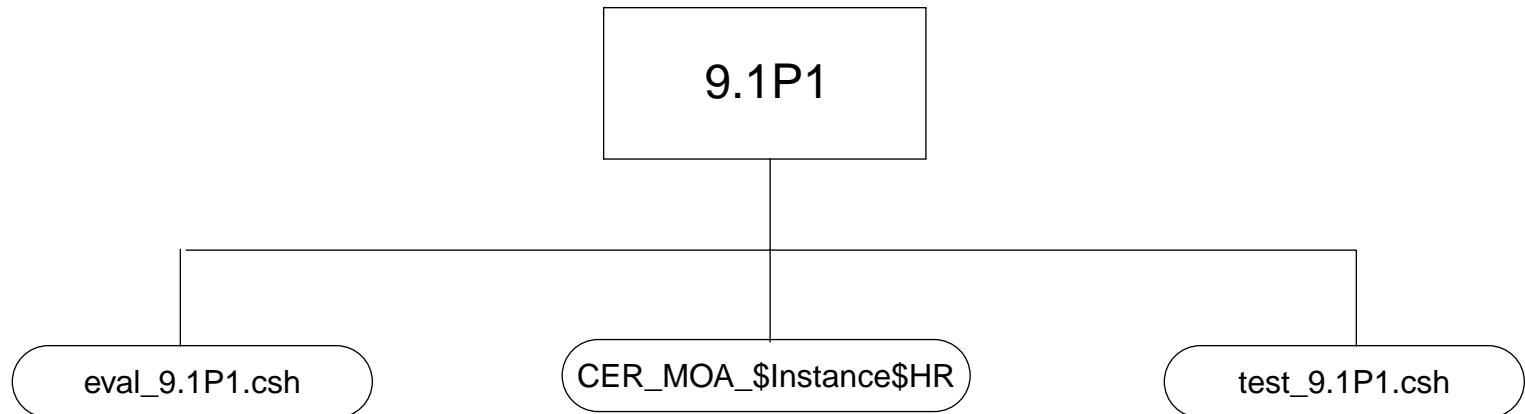
## Breakdown of the *tisa\_grid/test\_suites/6.1P1\_6.3P1* Directory



`$Instance = 'TRMM-PFM-VIRS_ValidationR1_000000.1986100105'`

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (41 of 43)

## **Breakdown of the *tisa\_grid/test\_suites/9.1P1* Directory**

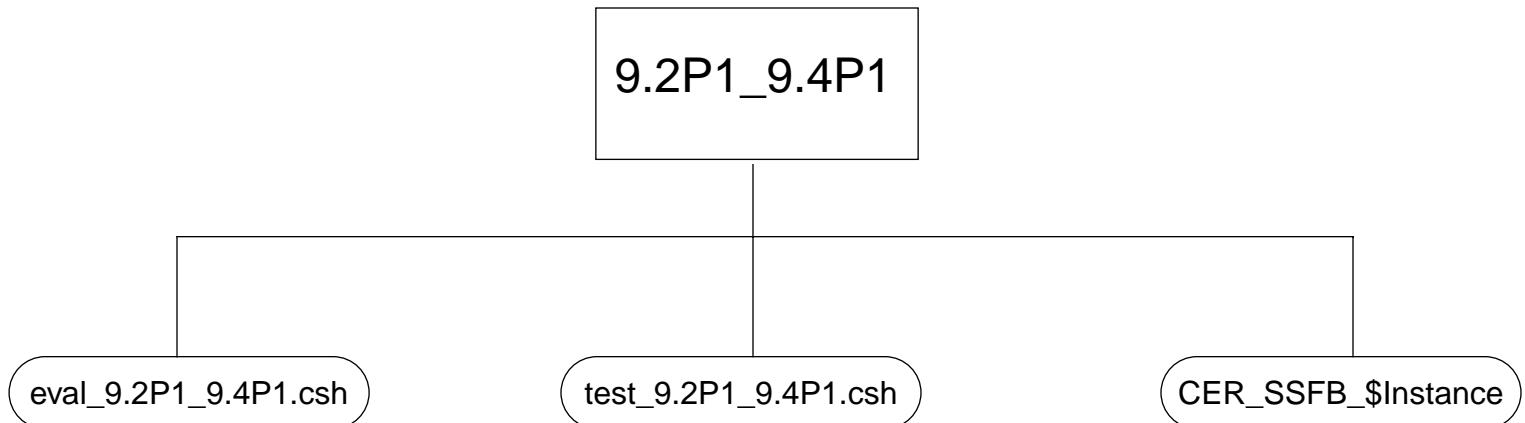


\$Instance = 'CERES\_ValidationR1\_000000.19861001'

\$HR indicates hour 00 through 23 for the 24 hour files

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (42 of 43)

## **Breakdown of the *tisa\_grid/test\_suites/9.2P1\_9.4P1* Directory**



\$Instance = 'TRMM-PFM-VIRS\_ValidationR1\_000000.1986100105'

Figure B-1. Directory Structure for Subsystems 6 and 9 within the TISA\_grid Working Group (43 of 43)

**APPENDIX C**  
**File Description Tables**

## Appendix C

### File Description Tables

#### C.1 Production Scripts and Executables

Table C.1-1. Production Scripts and Executables (Sheet 1 of 2)

<b>File Name</b>	<b>Format</b>	<b>Description</b>
tisa_grid_main_processor.csh	ASCII	C-Shell script which executes the Main Processor for PGEs 6.1 and 9.2
tisa_grid_post_processor.csh	ASCII	C-Shell script which executes the Post Processor for PGEs 6.2 and 9.3
tisa_post_moa_processor.csh	ASCII	C-Shell script which executes the Post MOA Processor ( PGE 9.1 )
tisa_grid_sfc_hdf_processor.csh	ASCII	C-Shell script which executes the SFC HDF Processor ( PGE 9.4 )
tisa_grid_fsw_hdf_processor.csh	ASCII	C-Shell script which executes the FSW HDF Processor ( PGE 6.3 )
tisa_grid_main_processor.exe <sup>1</sup>	Binary	Main Processor executable ( PGEs 6.1 and 9.2 )
tisa_grid_post_processor.exe <sup>1</sup>	Binary	Post Processor executable ( PGEs 6.2 and 9.3 )
tisa_post_moa_processor.exe <sup>1</sup>	Binary	Post MOA Processor executable ( PGE 9.1 )
tisa_grid_sfc_hdf_processor.exe <sup>1</sup>	Binary	SFC HDF Processor executable ( PGE 9.4 )
tisa_grid_fsw_hdf_processor.exe <sup>1</sup>	Binary	FSW HDF Processor executable ( PGE 6.3 )
input_gen_6.1P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 6.1
input_gen_6.2P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 6.2
input_gen_6.3P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 6.3
input_gen_9.1P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 9.1
input_gen_9.2P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 9.2
input_gen_9.3P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 9.3
input_gen_9.4P1.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by PGE 9.4
pcf_gen_6.1P1.csh	ASCII	C-Shell script which creates the PCF for PGE 6.1
pcf_gen_6.2P1.csh	ASCII	C-Shell script which creates the PCF for PGE 6.2

Table C.1-1. Production Scripts and Executables (Sheet 2 of 2)

File Name	Format	Description
pcf_gen_6.3P1.csh	ASCII	C-Shell script which creates the PCF for PGE 6.3
pcf_gen_9.1P1.csh	ASCII	C-Shell script which creates the PCF for PGE 9.1
pcf_gen_9.2P1.csh	ASCII	C-Shell script which creates the PCF for PGE 9.2
pcf_gen_9.3P1.csh	ASCII	C-Shell script which creates the PCF for PGE 9.3
pcf_gen_9.4P1.csh	ASCII	C-Shell script which creates the PCF for PGE 9.4
run_pge	ASCII	C-Shell script which runs all the PGEs for the Test Case
gen_pcf_template.csh	ASCII	C-Shell script which generates the PCF template for all PGEs
gen_pcf_template.perl	ASCII	Perl script which generates the PCF template for a PGE

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.2 Processing Control Files (PCF), Metadata Control Files (MCF) and Status Message Files (SMF)

The Process Control Files are not included in the Software Delivery Package. Templates are provided from which the PCF generator scripts will create the Process Control Files.

Table C.2-1. Process Control Files (Sheet 1 of 3)

File Name	Directory	Format	Description
6.1P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.1
6.1P1_INSUPP_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.1
6.1P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.1
6.1P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.1
6.1P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.1
6.2P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.2
6.2P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.2
6.2P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.2
6.2P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.2
6.3P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.3
6.3P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.3

Table C.2-1. Process Control Files (Sheet 2 of 3)

File Name	Directory	Format	Description
6.3P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.3
6.3P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 6.3
9.1P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.1
9.1P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.1
9.1P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.1
9.1P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.1
9.2P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.2
9.2P1_INSUPP_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.2
9.2P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.2
9.2P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.2
9.2P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.2
9.3P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.3
9.3P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.3
9.3P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.3
9.3P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.3
9.4P1_INPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.4
9.4P1_MCF_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.4
9.4P1_OUTPROD_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.4
9.4P1_RUN_PARAM_TEMPLATE	templates	ASCII	Process Control File template for PGE 9.4
PCF_template_CER6.1P1	templates	ASCII	Process Control File template for PGE 6.1
PCF_template_CER6.2P1	templates	ASCII	Process Control File template for PGE 6.2
PCF_template_CER6.3P1	templates	ASCII	Process Control File template for PGE 6.3
PCF_template_CER9.1P1	templates	ASCII	Process Control File template for PGE 9.1
PCF_template_CER9.2P1	templates	ASCII	Process Control File template for PGE 9.2
PCF_template_CER9.3P1	templates	ASCII	Process Control File template for PGE 9.3
PCF_template_CER9.4P1	templates	ASCII	Process Control File template for PGE 9.4
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 1	pcf	ASCII	Process Control File for PGE 6.1

Table C.2-1. Process Control Files (Sheet 3 of 3)

<b>File Name</b>	<b>Directory</b>	<b>Format</b>	<b>Description</b>
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 6.2
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 6.3
CER_PCF_CERES_ValidationR1_000000.198610 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 9.1
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 9.2
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 9.3
CER_PCF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	pcf	ASCII	Process Control File for PGE 9.4

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

Table C.2-2. Metadata Control Files

<b>File Name</b>	<b>Format</b>	<b>Description</b>
FSW-HR.MCF	ODL	MCF for the hourly FSW file(s) produced by PGE 6.1
IRGRP.MCF	ODL	MCF for the hourly FSW range report produced by PGE 6.1
IQCRRP.MCF	ODL	MCF for the QC report produced by PGE 6.2
FSWB.MCF	ODL	MCF for the monthly FSW file(s) produced by PGE 6.2
FSW.MCF	ODL	MCF for the monthly HDF FSW file(s) produced by PGE 6.3
PMOA.MCF	ODL	MCF for the Post MOA file(s) produced by PGE 9.1
SFC-HR.MCF	ODL	MCF for the hourly SFC file(s) produced by PGE 9.2
MRGRP.MCF	ODL	MCF for the hourly SFC range report produced by PGE 9.2
MQCRP.MCF	ODL	MCF for the QC report produced by PGE 9.3

Table C.2-2. Metadata Control Files

<b>File Name</b>	<b>Format</b>	<b>Description</b>
SFCB.MCF	ODL	MCF for the monthly SFC file(s) produced by PGE 9.3
SFC.MCF	ODL	MCF for the monthly HDF SFC file(s) produced by PGE 9.4
MOVLP.MCF	ODL	MCF SFC monthly overlap file produced by PGE 9.2

Table C.2-3. Status Message Files (Sheet 1 of 2)

<b>File Name</b>	<b>Format</b>	<b>Description</b>
ADMIN_MOD_25850.t	ASCII	Status Message Text File
CLOUD_MOD_25851.t	ASCII	Status Message Text File
CLRSKY_ADJ_MOD_25852.t	ASCII	Status Message Text File
CONTROLLER_25800.t	ASCII	Status Message Text File
CRS_FILE_25820.t	ASCII	Status Message Text File
FLUX_MOD_25853.t	ASCII	Status Message Text File
FOOTPRINT_25801.t	ASCII	Status Message Text File
FSW_HDF_26221.t	ASCII	Status Message Text File
FSW_HOUR_25822.t	ASCII	Status Message Text File
FSW_RANGE_25823.t	ASCII	Status Message Text File
GLOBE_25802.t	ASCII	Status Message Text File
GRIDPCF_25803.t	ASCII	Status Message Text File
HOURBOX_25804.t	ASCII	Status Message Text File
PMOA_FILE_25826.t	ASCII	Status Message Text File
POSTPROC_25891.t	ASCII	Status Message Text File
POST_MOA_26211.t	ASCII	Status Message Text File
REGION_MOD_25854.t	ASCII	Status Message Text File
SCENE_MOD_25855.t	ASCII	Status Message Text File
SFC_HDF_26222.t	ASCII	Status Message Text File
SFC_HOUR_25824.t	ASCII	Status Message Text File

Table C.2-3. Status Message Files (Sheet 2 of 2)

<b>File Name</b>	<b>Format</b>	<b>Description</b>
SFC_RANGE_25825.t	ASCII	Status Message Text File
SOL_STATS_25830.t	ASCII	Status Message Text File
SRF_RAD_MOD_25856.t	ASCII	Status Message Text File
SSF_FILE_25821.t	ASCII	Status Message Text File
STATS_MOD_25857.t	ASCII	Status Message Text File
SWATH_25805.t	ASCII	Status Message Text File
SW_DIRMOD_RTNS_25831.t	ASCII	Status Message Text File
SYS_PARAMS_25832.t	ASCII	Status Message Text File
TISAGRID_25888.t	ASCII	Status Message Text File
TISAVG_26300.t	ASCII	Status Message Text File

### C.3 Production Makefiles

Table C.3-1. Production Makefiles

<b>File Name</b>	<b>Format</b>	<b>Directory</b>
Makefile_global	ASCII	tisa_grid
build	ASCII	tisa_grid/bin
Makefile	ASCII	tisa_grid/src/ grid_main
Makefile	ASCII	tisa_grid/src/ grid_post
Makefile	ASCII	tisa_grid/src/ post_moa
Makefile	ASCII	tisa_grid/src/ grid_lib
Makefile	ASCII	tisa_grid/src/ grid_hdf/FSW
Makefile	ASCII	tisa_grid/src/ grid_hdf/SFC
Makefile	ASCII	tisa_grid/smf

## C.4 Ancillary Input Data

Table C.4-1. Ancillary Input Data

File Name	Format	Description
CERES_DIR_MODEL_19971212	ASCII	CERES Directional Models
fsw_cloud_adj_range	ASCII	Range check parameters for FSW cloud adjustments
fsw_cloud_cond_range	ASCII	Range check parameters for FSW cloud conditions
fsw_cloud_prop_range	ASCII	Range check parameters for FSW cloud properties
fsw_clrsky_adj_range	ASCII	Range check parameters for FSW clear sky adjustments
fsw_emissivity_range	ASCII	Range check parameters for FSW emissivity data
fsw_flux_profile_range	ASCII	Range check parameters for FSW profile fluxes
fsw_flux_srf_adj_range	ASCII	Range check parameters for FSW surface adjustment fluxes
fsw_flux_toa_range	ASCII	Range check parameters for FSW TOA fluxes
fsw_flux_type2_range	ASCII	Range check parameters for FSW profile and adjustment fluxes
fsw_region_range	ASCII	Range check parameters for FSW region data
fsw_scene_range	ASCII	Range check parameters for FSW angular model scene type data
fsw_srf_data_range	ASCII	Range check parameters for FSW surface data
fsw_srf_only_range	ASCII	Range check parameters for FSW surface only data
sfc_cloud_prop_range	ASCII	Range check parameters for SFC cloud properties
sfc_emissivity_range	ASCII	Range check parameters for SFC emissivity data
sfc_flux_srf_range	ASCII	Range check parameters for SFC surface adjustment fluxes
sfc_flux_toa_range	ASCII	Range check parameters for SFC TOA fluxes
sfc_region_range	ASCII	Range check parameters for SFC region data
sfc_scene_range	ASCII	Range check parameters for SFC angular model scene type data

## C.5 Primary Input Data

Table C.5-1. Primary Input Data

File Name	Format	Description
CER_CRSB_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>2</sup>	Binary	Binary CRS Produced by Subsystem 5
CER_SSFB_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>2</sup>	Binary	Binary SSF from Subsystems 4.5 & 4.6
CER_MOA_CERES_ValidationR1_000000.19861001\$HR <sup>2</sup> ( where \$HR is 00 through 23 )	Binary	MOA Hourly Product Produced by Subsystem 12

<sup>2</sup>These files will be copied from the appropriate test\_suites directory to the input directory during testing.

## C.6 Output Data Files (Expected Results)

Table C.6-1. Expected Output Data (Sheet 1 of 2)

File Name	Directory	Format	Description
CER_FSW-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	FSW_hour	Binary	Output File From PGE 6.1
CER_IRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	FSW_hour	ASCII	Output Range Report File from PGE 6.1
CER_FSWB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone (where \$zone is 000-151)	FSW	Binary	Output Files From PGE 6.2 for Zones 000 Through 151
CER_IQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610	FSW	ASCII	Output QC Report File From PGE 6.2
CER_FSW_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone (where zone is 01-16)	FSW_hdf	HDF	Monthly HDF FSW Files Produced by PGE 6.3
CER_PMOA_CERES_ValidationR1_000000.198610F\$num ( where \$num is 1-4)	PMOA	Binary	Output Files From PGE 9.1
CER_SFC-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	SFC_hour	Binary	Hourly SFC File Produced by PGE 9.2
CER_MRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	SFC_hour	ASCII	Hourly SFC Range Report Produced by PGE 9.2

Table C.6-1. Expected Output Data (Sheet 2 of 2)

File Name	Directory	Format	Description
CER_SFBCB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone (where \$zone is 002 - 065, 108-149)	SFC	Binary	Monthly SFC Binary File Produced by PGE 9.3
CER_MQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610	SFC	ASCII	Monthly QC Report Produced by PGE 9.3
CER_SFC_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone (where \$zone is 01- 07, 11-15)	SFC_hdf	HDF	Monthly HDF SFC File Produced by PGE 9.4
CER_FSW-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met	FSW_hour	ODL	Metadata File for FSW Hourly Product Produced by PGE 6.1
CER_IQGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met	FSW_hour	ODL	Metadata File for QC Report Produced by PGE 6.1
CER_FSWB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met (where \$zone = 001 to 180)	FSW	ODL	Metadata File for Monthly FSW Binary Product Produced by PGE 6.2
CER_IQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met	FSW	ODL	Metadata File for QC Report Produced by PGE 6.2
CER_FSW_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met (where \$zone = 01 to 16)	FSW_hdf	ODL	Metadata File for Monthly FSW HDF Product Produced by PGE 6.3
CER_SFC-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met	SFC_hour	ODL	Metadata File for Hourly SFC File Produced by PGE 9.2
CER_MRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met	SFC_hour	ODL	Metadata File for Hourly SFC Range Report Produced by PGE 9.2
CER_SFBCB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met (where \$zone = 001 to 180)	SFC	ODL	Metadata File for Monthly SFC binary File Produced by PGE 9.3
CER_MQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met	SFC	ODL	Metadata File for Monthly QC report Produced by PGE 9.3
CER_PMOA_CERES_ValidationR1_000000.198610F\$num.met (where \$num = 1 to 4)	PMOA	ODL	Metadata File for Output Files from PGE 9.1
CER_MOVLP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met	SFC_hour	ODL	Metadata File for Monthly Overlap File from PGE 9.2
CER_SFC_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met (where \$zone = 01- 07, 11-15)	SFC_hdf	ODL	Metadata File for Monthly HDF SFC File Produced by PGE 9.4

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.7 Output Data Files (Production Results)

Table C.7-1. Production Output Data (Sheet 1 of 2)

File Name	Format	Format	Description
CER_FSW-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	FSW_hour	Binary	FSW Hourly Product Produced by PGE 6.1
CER_IRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	FSW_hour	ASCII	QC Report Produced by PGE 6.1
CER_FSWB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone <sup>1</sup> (where \$zone is 000 -151)	FSW	Binary	FSW Monthly Product Produced by PGE 6.2
CER_IQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	FSW	ASCII	QC Report Produced by PGE 6.2
CER_FSW_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone <sup>1</sup> (where \$zone is 01 -16)	FSW_hdf	HDF	FSW HDF Monthly Product Produced by PGE 6.3
CER_PMOA_CERES_ValidationR1_000000.198610F\$num <sup>1</sup> (where \$num is 1-4)	PMOA	Binary	Output Files From PGE 9.1
CER_SFC-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	SFC_hour	Binary	SFC Hourly Product Produced by PGE 9.2
CER_MRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	SFC_hour	ASCII	QC Report Produced by PGE 9.2
CER_SFCCB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone <sup>1</sup> (where \$zone is 002-065, 108-149)	SFC	Binary	SFC Monthly Product Produced by PGE 9.3
CER_MQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	SFC	ASCII	QC Report Produced by PGE 9.3
CER_SFC_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone <sup>1</sup> (where \$zone is 01 - 07. 11 - 15)	SFC_hdf	HDF	SFC HDF Monthly Product Produced by PGE 9.4
CER_FSW-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met 1	FSW_hour	ODL	Metadata File for FSW Hourly Product Produced by PGE 6.1
CER_IRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met 1	FSW_hour	ODL	Metadata File for QC Report Produced by PGE 6.1

Table C.7-1. Production Output Data (Sheet 2 of 2)

<b>File Name</b>	<b>Format</b>	<b>Format</b>	<b>Description</b>
CER_FSWB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met <sup>1</sup> (where \$zone = 001 - 180)	FSW	ODL	Metadata File for FSW Monthly Product Produced by PGE 6.2
CER_IQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met <sup>1</sup>	FSW	ODL	Metadata File for QC Report Produced by PGE 6.2
CER_FSW_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met <sup>1</sup> (where \$zone = 01 - 16)	FSW_hdf	ODL	Metadata File for FSW HDF Monthly Product Produced by PGE 6.3
CER_SFC-HR_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met <sub>1</sub>	SFC_hour	ODL	Metadata File for SFC Hourly Product Produced by PGE 9.2
CER_MRGRP_TRMM-PFM-VIRS_ValidationR1_000000.1986100105.met <sub>1</sub>	SFC_hour	ODL	Metadata File for QC Report Produced by PGE 9.2
CER_MOVLP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met <sup>1</sup>	SFC_hour	ODL	Metadata File for Monthly Overlap File from PGE 9.2
CER_SFCCB_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met <sup>1</sup> (where \$zone = 002 - 065, 108 - 149)	SFC	ODL	Metadata File for SFC Monthly Product Produced by PGE 9.3
CER_MQCRP_TRMM-PFM-VIRS_ValidationR1_000000.198610.met <sup>1</sup>	SFC	ODL	Metadata File for QC Report Produced by PGE 9.3
CER_SFC_TRMM-PFM-VIRS_ValidationR1_000000.198610Z\$zone.met <sup>1</sup> (where \$zone = 01 - 07, 11 - 15)	SFC_hdf	ODL	Metadata File for SFC HDF Monthly Product Produced by PGE 9.4
CER_PMOA_CERES_ValidationR1_000000.198610F\$num.met <sup>1</sup> (where \$num is 1-4)	PMOA	ODL	Metadata File for Output Files From PGE 9.1

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.8 Output Temporary Data Files (Production Results)

Table C.8-1. Output Temporary Data Files

File Name	Format	Description
CER_FSWD_TRMM-PFM-VIRS_ValidationR1_000000.1989610\$day <sup>1</sup> (where \$day is 01-31)	Binary	Temporary Data Files Created by PGE 6.2
CER6.1P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	ASCII	ASCII File for PGE 6.1 - Generated by the Input File Generator
CER6.2P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	ASCII	ASCII File for PGE 6.2 - Generated by the Input File Generator
CER6.3P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	ASCII	ASCII File for PGE 6.3 - Generated by the Input File Generator
CER9.1P1_PIF_CERES_ValidationR1_000000.198610 <sup>1</sup>	ASCII	ASCII File for PGE 9.1 - Generated by the Input File Generator
CER9.2P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	ASCII	ASCII File for PGE 9.2 - Generated by the Input File Generator
CER9.3P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	ASCII	ASCII File for PGE 9.3 - Generated by the Input File Generator
CER9.4P1_PIF_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	ASCII	ASCII File for PGE 9.4 - Generated by the Input File Generator

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.9 Error and Status Message Files (Expected Results)

Table C.9-1. Error and Status Message Files (Sheet 1 of 3)

File Name	Directory	Format	Description
CER6.1P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.1986100105 <sup>1</sup>	6.1P1	ASCII	Report Log File for the PGE 6.1

Table C.9-1. Error and Status Message Files (Sheet 2 of 3)

<b>File Name</b>	<b>Directory</b>	<b>Format</b>	<b>Description</b>
CER6.1P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.1986100 105 <sup>1</sup>	6.1P1	ASCII	Status Log File for the PGE 6.1
CER6.1P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.1986100 105 <sup>1</sup>	6.1P1	ASCII	User Log File for the PGE 6.1
CER6.2P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.2P1	ASCII	Report Log File for the PGE 6.2
CER6.2P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.2P1	ASCII	Status Log File for the PGE 6.2
CER6.2P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.2P1	ASCII	User Log File for the PGE 6.2
CER6.3P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.3P1	ASCII	Report Log File for the PGE 6.3
CER6.3P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.3P1	ASCII	Status Log File for the PGE 6.3
CER6.3P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	6.3P1	ASCII	User Log File for the PGE 6.3
CER9.1P1_LogReport_CERES_Valid ationR1_000000.198610 <sup>1</sup>	9.1P1	ASCII	Report Log File for the PGE 9.1
CER9.1P1_LogStatus_CERES_Valid ationR1_000000.198610 <sup>1</sup>	9.1P1	ASCII	Status Log File for the PGE 9.1
CER9.1P1_LogUser_CERES_Validati onR1_000000.198610 <sup>1</sup>	9.1P1	ASCII	User Log File for the PGE 9.1
CER9.2P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.1986100 105 <sup>1</sup>	9.2P1	ASCII	Report Log File for the PGE 9.2
CER9.2P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.1986100 105 <sup>1</sup>	9.2P1	ASCII	Status Log File for the PGE 9.2
CER9.2P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.1986100 105 <sup>1</sup>	9.2P1	ASCII	User Log File for the PGE 9.2
CER9.3P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.3P1	ASCII	Report Log File for the PGE 9.3

Table C.9-1. Error and Status Message Files (Sheet 3 of 3)

File Name	Directory	Format	Description
CER9.3P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.3P1	ASCII	Status Log File for the PGE 9.3
CER9.3P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.3P1	ASCII	User Log File for the PGE 9.3
CER9.4P1_LogReport_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.4P1	ASCII	Report Log File for the PGE 9.4
CER9.4P1_LogStatus_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.4P1	ASCII	Status Log File for the PGE 9.4
CER9.4P1_LogUser_TRMM-PFM-VIRS_ValidationR1_000000.198610 <sup>1</sup>	9.4P1	ASCII	User Log File for the PGE 9.4

<sup>1</sup>These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.10 Test Evaluation Software

Table C.10-1. Test Evaluation Scripts and Executables

File Name	Format	Description
CER_CRSB_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	Binary	CRS Binary File from Subsystem 5
eval_6.1P1_6.3P1.csh	ASCII	Script to Evaluate the Validity of the Subsystem 6 Test Case Output
test_6.1P1_6.3P1.csh	ASCII	Script to Run the Test Case of Subsystem 6.0
test_9.1P1.csh	ASCII	Script to Run the Post_MOA Processor Test Case
CER_MOA_CERES_ValidationR1_000000.19861001\$hour (where \$hour is 00-23)	Binary	Hourly MOA products from Subsystem 12
eval_9.1P1.csh	ASCII	Script to Evaluate the Validity of the Post-MOA Processor Test Case Output
test_9.2P1_9.4P1.csh	ASCII	Script to Run the Test Case of Subsystem 9.0
eval_9.2P1_9.4P1.csh	ASCII	Script to Evaluate the Validity of the Subsystem 9 Output
CER_SSFB_TRMM-PFM-VIRS_ValidationR1_000000.1986100105	Binary	SSF Binary File from Subsystems 4.5 & 4.6